LOST SARASVATI

PRESENTING A STUDY OF THE NEW PERSONALITY OF EARLY INDIA AS EMERGING FROM A FUNCTIONAL-HISTORICAL INTEGRATION OF RECENT DATA ON HUMAN ECOLOGY, ARCHAEOLOGY, ANTHROPOLOGY, LINGUISTICS, AND LITERATURE BEARING ON THE SARASVATI, THE 'LOST RIVER OF THE INDIAN HISTORY', AND THE MECHANICS OF THE HUMAN PROCESS

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PREFACE

The Sarasvati, regarded as the Lost River of the Indian history, appealed the author, as did many other rivers, when he read its brief account in D. N. Wadia's well-known text-book on the Indian geology in the course of his studies.

It is difficult to isolate the Indian history as projected by a functional-historical integration from its general context with the rest of the human history. Besides, the time is now also ripe for the historian to break through the borders of the human history in search of its pros and cons.

Many of us perhaps will be surprised to find in this study as to how far the Sarasvati has gone in influencing ecologically man, his culture, and his vicissitudes in India. The Lost Sarasvati is unique in this respect in the world history. The Nile and the Ganga have though been worshipped as major deites, they have not otherwise played an ecological role comparable in historiographical importance to that of the Sarasvati. It has played two roles, a role in the world history and a role in the Indian history.

In the first role the Sarasvati served as a place of synthesis and meeting-ground between the two realms of the manifestations of the basic productive economy (in this form of economy man produces his food himself by means of agriculture, dairying and chemical food manufacturing : it stands in contrast to the predatory economy of hunting, fishing and slaughtering, *Infra*), termed the Indo-Pacific, stretching from the Gangetic valley to the Americas, where the productive economy is practised through the horticulture of rice, maize and potato without dairying and devices of rotary motion; and the Indo-Atlantic, covering the realm from the Indus Basin to the Atlantic Coast of Africa and Europe, wherein the food is produced by means of agriculture (plough – cultivation) of wheat, barley and rye, and by dairying, and the devices of rotary motion are present in the connected technology. The Sarasvati Basin was located at the junction of these two realms between the Ganga and the Indus. The communities of both the realms had to be on a slow but intermittently constant move towards India. The Indo-Pacific commumnity which had its cradle in Southeast Asia had to move onward on account of soil-exhaustion resulting from horticulture, i. e., burn-and-slash cultivation or *Jhum* or *Kumri* of Eastern and South India, and *milpa* of America; and the Indo-Atlantic did so for the reason of gradually increasing dry conditions of the Post-Glacial Afriasian Desiccation. The two commumities obviously crossed one another on the Sarasvati, and from this process has resulted a unique synthesis of humanity in history on the soil of India.

The second role of the Sarasvati has mainly influenced the history of the subcontinent. In the course of the first stage during and before the 4th millenium BC, when the in equestri Aryans of the Ranaghundai I-Qili Gulmuhammad II Culture were present in the Indus drainage an northern Baluchistan, the marshy conditions enabling the cultivation of rice and supporting a fauna including the rhinoceros, the elephant, the buffalow, etc., obtained on the Sarasvati. The rice was grown by the Indo-Pacific people who seem to have crossed the northern India on their way to reach the Middle East. It is a fact of the Indian geology that the entire bed of the Sarasvati, together with that arm of the Arabian Sea which formerly occupied the highly saline Ranns of Kutch and into which the river fell, lies on an earthquake-belt. So, it was more subjected to the changes through earth-movements than any other river of India. During the next millenium, the changed conditions in the Sarasvati basin permitted the

cultivation of the wheat, instead of rice, and the earlier fauna gave way to the cattle. The earlier population therefore shifted elsewhere to puruse the cultivation of paddy, and its place was taken by the agriculturists of wheat during the Indus times, who were the pre-Vedic Aryans belonging to the Indo-Atlantic community, whose diluted accounts we find in the Puranas and who were among the earliest Indo-Europeans to have crossed in the Gangetic valley with the rice-cultivating Austric-speakers falling into the Indo-Pacific community. In the third stage a new change during the early centuries of 2nd millenium BC, introducing further drier conditions on the Sarasvati having resulted from the drying up of the sea in the Ranns of Kutch, took place. These pre-Vedic Aryans of the Puranic lore were the people who had inaugurated the Urban Revolution in India, which was bifurcated into the Indus Civilization (Harappa Culture), c. 2300–1700 BC, that spread from the Indus Basin to the Gangetic Doab and the West Coast; and the Peninsular Chalcolithic Civilization c. 2300–1000 BC (Ranaghundai II-Nagda I-Maheshwar III-Prakasha I-Eran I-Bahal I-Nasik I-Brahmagiri I-Utnur IB Horizon of Indian archaeological stratigraphy), with which the urban institutions dominated by priesthood and aristocracy, spread over the Middle India and the South. The pre-Vedic Aryan India had progressed further from the Urban Revolution of the Era of Regional Development and Florescene to that of the Era of Cyclical Conquests, according to the functional-historical integration, as a result of which the Indian Aryan aristocracy established its hold over the Middle East (the Kassite aristocracy of Babylonia, the Marianna aristocratic class of the Mitannians and of a few other Asianic peoples of Assyria and Kurdistan, the Hyksos of Egypt : they were first to have introduced the domestic horse and the war-chariot into Western Asia and Egypt : the Hittite aristocracy of Asia Minor was though Aryan, but was distinct from those of India), which continued for the major duration of the 2nd millenium BC. The religious revolt of Akhnaten (1380–63 BC) in Egypt seems to have been inspired by the Indian aristocracies of the Middle East. The Middle East witnessed a period of the renaissance in culture, art and literature; and of comparative peace and prosperity under these Indian dynasties. The pre-Vedic Aryans in India were among those Indo-Europeans who had earlier got mixed up and acculturated with the Indo-Pacific rice-cultivating, fishing and sea-faring matriarchal Austric-speaking horticulturists of the Ganga-Brahmaputra valley and Southeast Asia. They then crossed the Pacific and established communications at least with South America, as we can say in view of the discovery of the cotton of the same Indian derivation as found at Mohenjo Daro, in Peru, carbon-dated c. 2500 BC at Huaca Prieta, and a pictographic writing most closely approaching the Indus Civilization writing surviving on the *rongo rongo* ancestral tablets of the Easter Island, the half-way house in the Pacific. The sea-lore of these pre-Vedic Aryans reflects in the Puranic mythology of Nārāyana, the god of the deep, and the supreme deity of the Hindu pantheon who reclines on the S'esha, the Indian adaptation of the Great Cosmic Serpent of the Pacific lore; the Ocean-Churning, a typically Pacific phenomenon around an active volcano in the sea; the animals of water as deities, the fish, the tortoise, the alligator, etc. The development of the Indian Civilization, the oldest living institution of the mankind in its catagory, was not, as the functional-historical interpretation of the protohistoriographical data demonstrate, just a subcontinental development. It was the first international synthesis in history, which took place between the matriarcal Indo-Pacific and the patriarcal Indo-Altantic food-producers and their institutions. It was connected with the Pacific in the east, as we have seen, on one hand; and with the Atlantic in the west, on the other. The sanctity and worship of cow is a Bantu

(African) institution in the ancient Indian Civilization which forms one of the main foundations of Hinduism. The principle of non-violence or *ahimsa*, or in biological terms, the relationship of symbiotic mutualism (co-operative partnership to the benefit of both parties); the lotus symbol; the belief in the immortality of soul and transmigration; the doctrine of *karma*; the conception of the Hall of Justice to decide the fate of the departed soul, according to his deeds of virtue and sin; and the horrid hell, which form the majority of the pillars of Hinduism, are indeed, the Egyptian elements in the fabric of the ancient Indian Civilizavtion.

The development of the ancient Indian Civilization later during the 3rd millenium BC, comprises the first international synthesis in history, in which the two basic productive communities of the ancient world, were involved. The early Indian Civilization may be defined in a nutshell to be a natural synthesis of the native American, the Pacific, the Southeast Asian, the Middle Eastern, the Mediterranean, and the African institutions into an Aryan matrix. The Indian tradition does not seem to be wrong in asserting that the classical age of ancient India terminated with the Bharata War.

In its third physical stage beginning soon after 1500 BC. the Sarasvati basin turned further drier and the new climatic conditions demanded now a change in agriculture from wheat to barley (*yava* of the Rigveda). The main centers of the pre-Vedic Aryans were shifted eastwards and in their wake the barley-cultivating Rigvedic Aryans took shelter on the Sarasvati. These were originally the Indic Aryans of the Middle East who were now being defeated and driven away by the Assuras or the Assyrians with the aid of iron weapons of war, and an improved type of the Aryan war-chariot. The Rigvedic ritual, hymnology, pantheon and priesthood follow an unmistakable Babylonian pattern. Vedic Varuna was originally Enki or Ea of Balylonia and Indra was an adaptation of the Asianic thunder-god, Teshup. The Vedic religion belonged to the Agricultural Horizon of religious development like that of Babylonia and Assyria, in contrast to the earlier Puranic-Agamic religion of the earlier Animistic Horizon of the pre-Vedic Aryans. The Vedic priesthood began to seek its hold at the courts of the kings of the pre-Vedic Aryan wave, but could not succeed soon. The struggle between two Aryan priesthoods is symbolized in Indian tradition by the rivalry between Visvamitra and Vasishtha.

A major catastrophe came about the middle of the 2nd millenium BC. The entire bed of the Sarasvati and the floor of the sea of its confluence were upraised by earthquakes, as a result of which the Sarasvati was dried up and the calamity was followed by a long spell of drought recorded in the ancient literature as the Twelve Years Drought during the reign of S'antanu; and the beginning of the formation of the Indian Desert in its sequel as the rainfall had further decreased. The Sarasvati basin was now useful for pastoralism and a little cultivation of millets here and there, as a result of which the Rigvedic Aryans shifted to the Gangetic Doab to the kingdoms of Kuru-Panchala and the Vedic priesthood was able to get a foota hold in the far-off Videha in the middle Gangetic valley, as we know from the legend of Vidagdha Mathava and other evidence. These catastrophes and events coincided with the enhanced arid conditions in the Middle East and in the Inner Asia as a result of which the settled cultivators began to turn the nomadic pastoralists and plunderers, if they failed to migrate either to Europe or India. The entire productive economy of the ancient Middle East lost its balance and efforts of the Aryans to continue further the prosperity and peace of the Middle East were not only failed, but they themselves were completely wiped out

by the ruthless Assyrians and others from the face of the Middle East of the second millenium BC. with the aid of the war-weapons of iron (the black metal which both the Aryans and the Egyptions had tabooed and both called it the 'black copper'), when they accepted it, all these economic and political calamities reached their climax in the Maha Bharata War of c. 14-13th contury BC. The intrusive Vedic culture underwent some significant changes in the course of its shift from the Sarasvati to the Ganga, for intsance, the acceptance of iron, the 4th *varna*, the 4th Veda, and the change of diet from barley to rice, because only the latter could be cultivated in the Gangetic valley even in the Doab in those times. The fact that the Aryans were pursued by their Middle Eastern enemies right into India, their home, demonstrates the political weakness to which the adverse economic consequences of the physical catastrophies and other calamities had reduced India. The Nagas or the ancint Middle Easterners of the Puranas and the Epics (Varuna, who was the presiding deity of the Western or the Arabian Sea ruling from Susa, now near the Perso-Iraqi border, has been regarded as the king of the Nāgas, according to the Puranas) attacked India from the west, established themselves at Taxila, assailed Hastinapur, and killed Parikshit, the successor to Yudhishira of the Bharata War days. Afterwards, many a 'Nāga' peoples, both foreigners from the west, or their descedants in India, ruled in various parts of the subcontinent down to the first millenium AD, for instance, the Sisunagas; the Nāgas of Vidisha, Padmavati, Kantipuri, Mathura; etc. They had entered India even earlier, for the Nāga are stated to have ruled at Mahishmati on the Narmada, before the Haihayas occupied it.

Beliefs may change during a crisis. All the above calamities helped indeed the struggling Vedic priesthood to have won the court-patronage from the earlier Atharvan and Puranic priests at last during the reign of Janmejaya, who succeeded Parikshit. The intrusive Vedic culture was now subjected to a dual change. The Sarasvati basin had now become sacred, as the old places often do so, under the names Brahmāvartta, Kurukshetra, etc. Institutions for the cultivation of literature, and learning were set up on its banks. With a view to perpetualizing their profession, the Vedic priests began, on one hand, to recast the entire pre-existing Aryan literature like the Puranas so that it may conform to the authority and the superiority of the Vedas; and, at the same time, the Vedic cult began to be absorbed silently and peacefully by the Agamic cult of the pre-Vedic Aryans of the Gangetic valley. The Vedic literature after the Rigveda began to be increasingly influenced by the earlier Aryan cult, as the gradual entry of the Puranic kings and other figures; non-Vedic deities like Vishņu and S'iva; monotheistic tendencies; transmigration; the doctrines of *karma* and *ahimsā*; etc., shows. At the end of the process, the Veda remained in the word and its cult got assimilated into the earlier Agamic religion of Hinduism.

Iron now began to replace stone and copper as the chief industrial material, and its more tensile strength and cheapness brought about a revolutionary change in technology, and thereby better and finer workmanship began to appear in arts. and crafts.

When the Doab came under the full control of the Vedic Aryans, and the Vedic term Aryāvartta begen to cover it, the middle Gangetic area where the political strength was now centering in Magadha or South Bihar, was still a stronghold of the pre-Vedic Aryans whom the Vedic Aryans knew as the Vrātyas, the S'udras, etc.. The former had already introduced the Urban Revolution in the Brahmaputra valley by the time of the Bharata War, when the kingdom of Pragjyotisha is mentioned to have flourished there. But the institution could not penetrate thickly-forested and malarious Indo-Burmese border-hills, in order to

spread over Southeast Asia. This was undertaken centuries later by way of the sea across the Bay of Bengal from the base of the Indian East Coast by the Dravidian kings of South India.

The impoverished post-Rigvedic Sarasvati of the early first millenium BC, having an intermittently dried up bed inhabited sparsely and dotted mainly here and there with the centers of learning and austerities as we gather from the account of Balarama's sojourn along this river in the Mahabharata, was though began to be attacked by the newly-forming desert-dunes, commenced to play a very significant ecological role at the same time. The fierce Aryan pastoral hordes of the Ābhiras, the Sakas, the Gurjaras, the Hunas, the Jats, the Yaudheyas, the Bhattis, and many others began to migrate from the now drying up Inner Asia and took the direction either of Europe or of India. In Europe they found it more remunerative to plunder than to pasture and the role they played there later is well-known. The same people entered the Sarasvati basin and found it to be rich in pastures. They not only settled here peacefully, but sought also an entry into the Indian society, which was then growing more and more as an institution of international and universal character on account of increasing immigrations.

This was the period of heavy pressure of incoming population in the Indian history, because the growing arid conditions in the adjoining Inner Asia and Iran, on account of the rising Afrasian Desiccation, reached a saturation point which began to threaten even the pastoralism. The great Himalayan wall has protected India against its inroads, with the exception of the trans-Indus region (the Indian Desert owes its origin largely to the withdrawal of the marine conditions from the Ranns of Kutch and from the Bhāl-Nalkantho tract lying on the hinge between the former Island of Saurashtra or Kathiawar and the mainland, deflecting somewhat the passage of the south-west monsoon; and partly to other physical agencies operating during this Neothermal). Being a subcontinent with full economic capacity to rehabilitate a vast population in all the economic stages, India offered, indeed, all that what these immigrating peoples needed. The Indian priest in his turn had to be busy with devising sanctions of the Indian Civilization in order to absorb these pastoral peoples through new rituals, in addition to those already known as the *Vratyastoma*, the *Ekāhas*, etc. That the approach by the Indian priest was deliberately synthetic in this respect, becomes evident from the fact, as we know from the *dharmasūtras*, that various formulas were fabricated in order to attract those beyond the Aryan pale so that they may feel that they belonged originally and essentially to the Aryan fold and were descended through various matrimonial combinations among the four Aryan *varṇas*; and that they were later degraded to a lower position, because of their growing indifference to the proper rituals and observances (We know the instances of a number of the 'seers' of the Vedic hymns as having attained the priesthood from lower levels by their own efforts through the strict observance of the Vedic ritual and leading a religious life). For instance, the Austric Nishādas who were fishermen according to *Manu*, 48, were declared to have born from a Brāhmaṇa (priest) father, and a S'udra (artisan and servile castes) mother [*Manu*, X, 1]; and the Ābhiras, an Aryan pastoral tribe from the Inner Asia, from a Brahmana father and an Ambashṭha (born of a Brahmana father and a Vaishya mother) mother [*Manu*, X, 8 & 15]. The number of sub-castes in the Indian society corresponds, indeed, approximately to the same

number of initiated alien tribes, to whom the ecological odds were driving into the hearth of India. It demonstrates, indeed, the gigantic magnitude of the process of the Indian synthesis as an institution of international and humanitarian character. On their entry into the Indian society the leaders of these pastoral tribes began to play a significant political and cultural role in the history of India and continued as the Rajputs to dominate the Indian scene down to the middle of this century.

A somewhat novel and important development was in the meantime taking place among the pre-Vedic Aryans in Eastern India, who had borrowed the main elements of their religion, including the bioethical doctrine of 'symbiotic mutualism' or *ahimsā*, from Egypt. It was under the aegis of the S'ramamic institutions of Jainism and Buddhism that *ahimsa* first received the official sanction and thus became the foundation of these two systems in eastern and northern India, and later of Saivism and Vaishnavism in the South. It was the Buddhism and Saivism as well as Vaishnavism which served as the vehicle of the Urban Revolution when it was introduced by the Dravidians from the Cholamandalam across the Bay of Bengal into the Southeast Asia, and thus were founded the first Indo-Pacific kingdoms of Fu-nam in the 1st century AD and of Champa in the next century in Cambodia; Lankasuka in Malaysia in the 2nd century; Srivijaya in Sumatra and the Sailendra in Java in the 5th and the 6th centuries AD, respectively. The acceptance of the bioethical principle of the symbiotic mutualism or *ahimsā* through the Buddhism by even the fierce tribes of the Southeast Asia, the Far East and the Inner (Central) Asia marked the dawn of a new era in the human process, as we shall see later. Just as Africa and Java are the cradles of the current history or Civilization of Subhumanity, so are indeed the valleys of the Nile and the Ganga in Egypt and eastern India the birth-place of not only the Civilization of the Humanity, but also that of the Greater Humanity (*Infra*).

It was down to c. 1000 AD that the ever-expanding desert-conditions in the Sarasvati basin allowed some ancient cities to flourish in the Indian Desert, for instance, Bhattinagara (Bhaṭner or Hanumangarh), Rangmahal, Tanot, Pugal, Pallu, Khandel, Osian, Kiradu, etc.

The Sarasvati basin (now the Ghaggar-Nāḷi-Hakḍā-Whinda-Purāṇ-channel) has since remained more suitable for pastoralism on account of scanty rainfall and the development of the Indian Desert on the left bank of the dry bed of the river. Being located at these ecologically strategic junction of the Gangetic and the Indus plains and the rocky Peninsula on the major South Asian routes of commerce, culture and ethnic movements between the humid Southeast Asia and the arid Middle East; and being travered by these ancient caravan-routes leading from the great marts of the Mediterranean, Anatolia, Azerbaijan, Assyria, northern Iran, the Caspian and Tarim basins and the Kirghiz Steppes in Central Asia by the way of Nineveh (Sonitapura), Hamadan, Anau, Khiva, Tashkent, Pushkalavati, Taxila, Sākala, Sthaneshwar (Kurukshetra), Panipat, Hastinapur, Kauśambi, Kashi and Girivraja to Tamralipti, and other ports on the East Coast (Cholamandalam), from where the Indian mariners set sail to the Pacific; it appears obvious that the Sarasvati has much influenced the general pattern of the Indian history. Many decisive battles of the Indian history from the period of the Bharata War down to that of the Marathas have been fought in the Sarasvati basin at Kurukshetra, Panipat, and other places.

The Lost Sarasvati has thus been in the course of history the river of the Indian synthesis. The Sarasvati is now preparing itself to play its sixth role in history. The Suratgarh Farm lies entirley on its flood-plain. Its rejuvenation in recent years is indeed unexpected. The Rajasthan Canal is now going to replace the Lost Sarasvati, thanks to the gigantic human efforts in recent times in the Indian Desert (the Thar in India and the Thal in Pakistan).

We are never going to know the 100% truth about the past. History speaks in terms of probabilities in various degrees. The shape of the ancient Indian history is still plastic. The following appear to be the salient features of India's ancient past as may be gleaned in the latest light from a functional-historical integration of the available data, such as is attempted in the present study.

(1) The latest opinions are now tending to credit the *Ramapithecus brevirostis*, a fossil anthropoid from the Sub-Himalayan Siwalik hills in Himachal Pradesh and the Punjab, who lived from 14 million years BP (the upper Miocene Nagri Stage of the Middle Siwaliks) down to 1 million years BP (the Pre-Villafranchian Tatrot Stage of the Upper Siwaliks), as having been the man's acestor (Elwyn Simons, 1961 & 1964 ; Carleton S. Coon, 1962 ; J. Buettner Janusch, 1966 ; David R. Pilbeam, 1967). The *Ramapithecus* lived in the valley of the gigantic Indian prehistoric river, the Indobrahma, which flowed from Assam to Sind along the Lesser Himalayas. The Indobrahma existed down to the end of the Second Glaciation of the Alpo-Himalayan Pleistocene (Ice Age), about 2,00,000 years BP, when the Palaeolithic (maker of chipped stone-tools for hunting and root-digging) *Homo erectus* (our immediate ancestor : we are *Homo* sapiens *sapiens*), the descendant of the hominoid Ramapithecus, originated probably in Africa after the latter's migration from India, appeared in its valley as the author of the Pre-Soan flake industry, found in its latest deposits, the Upper Siwalik Boulder Conglomerates. Another wave of the Palaeolithic man, the man whose lithic industry shared its essential features with the contemporary African industries, appeared in the southern India. The geological horizon of India's these oldest known Palaeolithic cultures of 3,00,000 years BP, belongs to the times when the configuration and the hydrogaphy of the subcontinent were somewhat different from what we have at present. Man in India thus seems to have witnessed the gigantic upheavals under the Himalayan tectonic (mountain-building) forces turning catastrophically the bed and valley-fill of the majestic Indobrahma river and the extensive Karewa Lake covering Kashmir into the sub-Himalayan Siwalik Hills and the lofty Pir Panjal Range pierced by the Banihal Pass, and the synchronizing terminal phase of the uplift of such scarp-mountains as the Vindhyas, the Satpuras and the Sahyadris. He appears to have seen with his own eyes the origin of the Indus, the Ganga and the Brahmaputra, and their reclaiming with deposits those arms of the sea which formerly occupied Bengal, western Rajasthan and Sind, and the drying up of large Pleistocene lakes in South India, Baluchistan and the Helmand Depression.

(2) The presence of strong Indo-European or Aryan elements in the American Proto Language of c. 15,000 BP found out by linguistic researches at Mexican and other

universities by serious scholars (Morris Swadesh, 1960, and others*) is significant, because it suggests a still earlier date for the Aryans in the Old World, harking back, strangely enough, to one of the last phases of the Würm or the Fourth Pleistocene Glaciation (70,000-10,000 BP).

(3) The history of the vast Palaeolithic (technological) times spanning over the entire Pleistocene (10,00,000 years 10,000-BP), ten times as longer as the period of all the subsequent technological developments during which the mutually co-operating or clashing bands of nomadic hunters and gatherers belonging, like us, to the Civilization of the Subhumanity (*infra*: the bioethical level in which man largely derives his vital resources through predation and parasitism) based on the predatory economy of hunting, fishing, slaughtering and exploitation with no attachment to the soil, and therefore without a tie to a fatherland or a motherland anywhere on the globe, was as dull and monotonous as hardly to evoke a general interest. The eventful and colourful human history commenced as soon as man began to attach himself to the soil and to the consequent conceptions of property and capital, as a result of the spontaneous rise of the productive economy of agriculture and dairying, with which has indeed dawned the Civilization of Humanity in which man has gradually been ascending from the lower levels of predation and parasitism of Subhumanity to those leading to the realization of symbiotic mutualism of the bioethically higher Humanity Status. The rise of the productive economy is therefore the most momentous economic event of history which, according to the latest researches (Carl O. Saur, Hermann von Wissmann, E. Werth and others), is creditd to the ingenuity of the peoples of Southeast Asia (Viet-Nam, Laos, Cambodia, Thailand, Malaysia, Indonesia, Burma, etc.) who invented and practised it, and then inspired by the urges of gaining new knowledge and altruism spread it to both the hemispheres, and the process was practically over by 7,000 BC. Thus contrary to our current conception that the Indian history began in the west from the Khyber, the Bolan and other passes, it now seems to have commenced in the east from the Tsangpo-Brahmaputra valley and the Bay of Bengal thousands of years earlier than we think of its antiquity at present.

(4) The traces of the oldest known nucleated villages of the mankind belonging to a pre-Blade flake industry of late Middle Stone Age have been found in the course of a decade practically all over the Peninsular India (the rest of India south of the Indo-Brahmaputra Plain), the like of which is still unknown out of India. In the oldest Middle East the first nucleated villages belonged to a later microblade stage of the

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* Mendoza, G., *Estudio Comparativo entre el Sanskrito y el Nahûatl* Mexico, 1878; Hammerich, L. L., 'Can Eskimo be related to Indo-European', *International Journal of American Linguistics*, XVII, 21-23, 1951; Thalbitzer W., 'Possible Early Contacts between Eskimo & Old World Languages', *Selected Papers* of *XXIXth International Congress* of *Americanists*, 1952, pp. 50-54; Swadesh, Morris, 'Materiales para un Diccionaries Comparative des las lenguas Amerindias', *Cuadernos de Historia*, Mexico, 1958; and 'On Interhemisphere Linguistic Connections', *Culture in History*, Brandeis University, 1960, pp. 894-124.

Natufian–Karim Shahir–Jericho Proto–Neolithic–Belt Cave X–VIII Horizon (10.000–8000 BC.) of the Middle Eastern archaeology which marks a later development than that of the flake industry of India's late Middle Stone Age villages.

(5) The Dravidian mystery is still deepening. The isolated Dravidian linguistic family displaying probable connections with the Australian languages on the east of the Indian Ocean (P. W. Schmidt 1936); and with the Negro African (Homburger, 1962) speeches of the Sub–Saharan Africa on the west, harks back for the antiquity of the Proto–Dravidian language to the times prior to the 4th millenium BC on the soil of South India, in the light of recent lexico–statisitic studies (M. Andronov, 1964). The location of a pre–Indian Dravidian home, if there was one, is still a desideratum. The Dravidians were initiated to the incipient productive economy, like the people of the Middle East, by the immigrating Austric–speaking pioneers of the Southeast Asia. By the early 2nd millenium BC, when the Urban Revolution of the Middle Eastern pattern had already been introduced into South India, probably under the leadership of Agastya who is mentioned in the Rigveda, by the pre–Vedic Aryans, the Dravidians were spread practically to all the parts of northern India including Kashmir, from Bengal in the east to the Indo–Sarasvati basin in the west, as an intrusive element in the pre–Vedic Aryan continuum of the subcontinent. The Indo–European languages of India (Indo–Aryan) differ from all other speeches of their family, because they have adopted the Dravidian ratroflex sounds. The early Dravidians in northern India were neither the authors of the Indus Civilization, nor were they the immediate ancestors of the Brahuis of central Baluchistan, who now occupy the intermediate geographical position between the Pakhtuns (Pathans) and the Baluchs. The further Dravidian role in history comprises: (1) the adoption and development of the bioethical doctrine of *ahimsā* in Hinduism and its spread to northern India, together with the *pujā* and the *Bhakti–mārga*: (2) the diffusion of the Urban Revolution together with Saivism and Vaisnavism to Southeast Asia by the sea during the 1st millenium AD, under the great Pallava monarchs: and (3) a probable role in planting the urban institutions in the Pre–Columbian Meso–America, as becomes apparent from more than the casual affinities between the Dravidian monumental art and that of the Aztecs and the Mayas of the Middle America (M. Covarrubias, 1954; Emily H. Vokes, 1963; E. W. Houry, 1966; R. L. Rands, 1953), particularly the features connected with the 'Complex A' at Copan, etc., according to Vokes and Houry, viz., the pyramid–temple, the trefoil arch, the sanctuary within a temple, the lotus symbol, the sacred tree, tiger throne, *chac mool*, gallery structure, atlantean figures, seated–lion, elephant–head, sun–disc, copper bells, conch–shell with plant, monster doorway, so–called 'Vishnu figures', etc., as well as the nature of the ancint American god Quetzalcoalt* who preached *ahimsa*.

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* "Warfare among the peoples of ancient Mexico", writes John Collier, "would strike us strange. It was exceedingly ceremonial. The main principle was this: Do not kill your enemy but capture him, not only for your own glory but also for his, since he will be sacrificed and thus pass as renewed might into the gods who make for fertility upon the earth and moves the sun and the stars ... Nezahualcoytl, the great Texcocan king, state-builder, law-giver, and patron of

(On Page X)

Earlier in the present millenium, the Indian history has witnessed a phenomenon of rare occurrence. The Koiturs, as the Gonds call themselves, belonging to a late Palaeolithic-like Pre-Agricultural Stage of hunting-gathering, spread by 1000 AD northwards from the lower Godawari in Andhra. In the course of their northward move across the Satpura Plateau, they went on passing through the subsequent functional-historical stages achieving the Classical or the stage of Cyclical Conquests, the climax of the pre-Industrial civilization, when they became from the Dhur-Gonds (Dust-Gonds) the Raj-Gonds (King-Gonds) and declared themselves to be the Kshatriyas. They established a vast and powerful kingdom in the Middle India called 'Gondwānā' after them, which, according to the Persian chroniclers of medieval India, extended from Jhārkhand to Malwa. Despite some of their aboriginal habits and practices, their chiefs (Raj-Gonds) were accepted for their qualities by the Rajput dynasties for matrimonial relations. Sangram Shah, 47th in the line of Garha-Mandla who came to throne in 1480 AD, held sway over the 'Fifty-Two Forts' of middle India and issued a currency bearing legends in Telugu and Hindi from Singorgarh near Bhopal. The queen Durgāvati is among the great personalities of medieval India. The name 'Gond' has not remained confined to 'Gondwānā' alone, but has been extended by geologists to Australia, South Africa and South America with the name of 'Gondwanaland' and the coal-bearing carboniferous 'Gondwana Beds', because Gondwana is rich in these rocks.

(6) The Mongoloid Tibeto-Burman speakers and some neighbouring peoples have been the residents of that northern orographic component of the Extra-Peninsular division of the Indian subcontinent, which, as also according to the ancient Indian historical and geographical traditions and when India is considered as a homogeneous physical and hydrogrophic unit, runs from the Tien-Shan Mountains in the north in the Uttara Kuru sector of ancient India, and from the upper reaches of the Mekong river of the Pacific drainage in the Asian Interior in the north-east, towards the south to the Indo-Burmese Yomas, and the Indus-Brahmaputra Plain, the next physiographic division of the subcontinent. They are the Yakshas, the Kinnaras, the Vidyādharas, the Gandharvas together with the Apsaras, and the Kirātas of the ancient Indian literature, whom the Aryans had elevated to the status of the celestial beings, because, the former had already come into the association of the ancestors of the Aryans in their

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all culture, tried to put a stop to the exaggerated display of human sacrifice. .. But Nezahualcoytl's voice was not the only voice that had been raised against human sacrifice. Dim centuries before, the great god Quetzalcoatl had enjoined the people against blood-sacrifice. The myth of Quetzalcoatl is the most diffusive of all the presences of Middle America ... Quetzalcoatl in a time long gone (the Toltec time) descended from heaven where he had been the god of the Air. He became man, and taught all arts, wisdom and kindness to the people" [*Indians of the Americas*, NY, 1947, pp. 48, 52]. His Toltec pyramid temple is found at Cholula, the religious capital of the cult of Quetzalcoatl. It is also the largest pyramid in the world, because its dimensions exceed those of the pyramid of Cheops, the highest in Egypt "[Brion, Marcel, *The World of Archaeology : India-China-America*, Lon, 1961, p. 196].

pre-North Indian home. They constitute an important element in the Indian mythology. The Mongoloid lady the *apsārā* and her golden complexion are among the ideals of the Indian conception of the female beauty. The *apsarās* were coveted for by the Aryans and even their god Indra. The Lunar dynasty of Pratishṭhan near Allahabad, shared probably the Mongolian blood, because Yayati had married the *apsarā* named Urvaśi.

(7) The marine fishing in the predatory economy and the plough-cultivation in the productive one provide adequate surplus food and leisure for the development of urban crafts and institutions in the settled villages under given ecological circumstances. The city-plan of Mohenjo-Daro presupposes an earlier background for the development of town-planning in comparison to the contempory Sumerian cities, and of certain urban crafts and institutions on the Indus. It is therefore in the fitness of things that the Sumerian tradition locates the cradle of the urban crafts in the land of Dilmun lying in the east of Iraq across the Persian Gulf, which has recently been identified with the littoral Western India (S. M. Kramer, 1963, and others). It was the Indo-Babylonian sea-god Enki-Varuna who, according to the Sumerian tradition, carried the plough and urban crafts from Dilmun to Sumer (early southern Iraq) and introduced them to the Proto-Sumerians during the middle of the 5th millenium BC (Eridu Culture).

(8) The Indo-Europeans or the Aryans seem to have entered the Indian Plain in the form of intermittent waves. The presence of the Aryans in protohistoric archaeology may also be traced, over and above the linguistic evidence, on the basis of the finds of the bones of domestic horse, the animal exclusively connected with these people; a peculiar solar symbol; the remains of the horse-drown war-chariot without iron tyres (first used by the Asuras or the Assuras or the Assyrians on their having adopted the Aryan war-chariot against the Aryans themselves and thereafter its use became universal); etc. The term ārya in the coures of the Aryan history has undergone several semantic changes. The presence of the Aryans has been traced all over America during 15,000 BP. As the human relics earlier than those of the *Homo sapiens* and the Upper Palaeolithic times do not occur in the Antipodes, man and therefore the Aryans must have entered the New World from Asia through the Bering Strait. The Aryans thus must have been present in the northern Asia much before 15,000 BP. P. Bosch Gimpera, 1961, has attempted to trace the Aryans before the Neolithic. The language was the only criterion for the identification of the Aryans during the pre-Agricultural stage. The term Arya seems to have been adopted by these people when they took to the plough cultivation. The term subsequently underwent further semantic changes. From 'the plough-cultivator' it was changed to 'the noble' during the Indo-Iranian times: then to 'the one who observes the rules of the varnāśrama social system' (later Vedic, etc.), and lastly that of 'the ideal man' of the S'rāmanic institutions of the Jainism and Buddhism. The language has been the chief vehicle of Aryanhood at all stages, just as the Arabic has been that of Islam. This is one of the reasons behind such a wide-spread distribution and expansion of the Indo-European languages and the Arabic. At least the following four major Aryan waves can be gleaned from the data on the past.

(A) The presence of the plough-cultivator Aryans in the Pakhtun region in northern Baluchistan during the fourth millenium BC as the horse-keeping early chalcolithic peasant-villagers of the Ranaghundai I culture of the Zhob valley in the Indus drainage.

(B) The pre-Vedic Aryans of the Puranic tradition.

(C) The intrusive Vedic Aryans.

(D) The Aryan pastoral tribes from Inner Asia and Iran the chiefs of which established themselves as the feudal Rajputs who dominated the scene of Indian history down to the British rule.

Delving deeper into the conceivable roots of humanity with such tools as psychodynamics and dietetics as reflecting from history, the author has tried to probe into the pros and cons of the human species with a view to evolving a new angle from which to look more objectively at the human process and to discover its mechanics. The author states that man has a dual personality, an outer one comprising the physiological apparatus and a mysterious inner self seated in the brain in which he feels the 'I'ness, and the the two require two distinct types of motive energy for the functions of their complex mechanisms.

A study of the behavioural pattern of the individual through the human continuum suggests that every average human individual is motivated by his inner self to feel subjectively and express under sympathetic conditions that he is unique in the mankind and tries to develop and demonstrate his uniqueness to the society, but the present socio-economic set-up discourages him and obstructs his path. It suggests further that the human individuals whom the circumstances have helped have gone to the extent of claiming and declaring the Almightiness or Goodhood for themselves in the course of history. This is very significant. It furthermore suggests many more things, including that man possesses such a keen and eager desire to acquire more and more knowledge of the unknown that in doing so he disregards the inherent physical limitations to the horizons of the functions of his sense-organs or perceptors and turns for relief to the cultivation of science and technology. All these are very significant and suggestive factors from which the author propounds that the inner man seems to have fallen from the higher status of a lost position. The plysiological evolution of life-forms from the amoeba onwards has side-by-side caused a gradual developmet of the brain or in other words of the inner self, which has culminated in man who is now immune to further external evolution because he has become able to aid and expand the functions of his limbs and organs with artifical devices and means. Every living-form in the phenomenon of life is thus a speck of the Almighty and the Omniscient in various degrees of mental or inner development. Standing thus singulary at the apex of the biological phenomenon in the universe, man has obviously to pursue his further course in the realm of development of his inner personality in order to regain in the long run the Almightiness and Omniscience on the individualistic level through the cultivation of what the author calls the Positive aesthetic urges, viz., altruism; worship; the arts and literature of the beautiful and of the inner peace and optimism; science; sports and festivities, etc., which press themselves for fulfilment as soon as his biological urges are satisfied. Here again we come across a peculiar factor. The curves in a graph of the cerebral development drawn across the evolution of life suggest that there has been

an abnormal pressure on the human species from the *Homo erectus* of the early palaeolithic technological stage onwards to *Homo sapiens sapiens* of the subsequent higher stages (the entire humanity of today belongs to this sub-species) for pursuing the inner development and therefore man often turns for relief to the *Tasawwuf* (Sufism), the *yoga*, etc., in order to seek a short cut for the return-journey to the Almightiness. Man faces a great crisis in this respect.

Man is constitutionally a herbivorous animal and his digestive system rejects generally other foods. Just by the time the severe climatic conditions of the initial phase of the Pleistocene or the Ice Age causing the paucity of edible vegetation about seven lakh years ago began to challenge the survival of man, he discovered to control and use the fire which turned the animal flesh both digestible to his system and delicious to his palate on being cooked. Man thus won the battle of survival by turning to omnivorism, but lost innocently his track of inner development back to the Almightiness, because the animal-diet is not capable of generating and providing that distinct type of energy which the mechanism of the inner human development needs for its operation.

Every life-form that comes into physical existence spontaneously has a meaning and a purpose. It forms an essential and irreplaceable working component in the mechanism of the phenomenon of life in the cosmos. The destruction of life-forms by man for his food and equipment under the predatory economy obviously disturbs and disrupts the cosmic functions, with the result that man being himself a component of the great mechanism has been suffering from the adverse consequenses of this ill-state in the cosmic affairs. Man has thereby innocently created such cardinal grievances and sufferrings for himself as the tragic and premature death, malignant diseases, separation from the 'Lost beloved' {326-I}, and all the rest that is too undesirable in his personal and social affairs. What does happen then to the starving and pressing inner human development seeking its normal course through the cultivation of the Positive aesthetic urges under these adverse conditions? It turns to the only course open to it and that lies through the passage of the opposites of the Positive urges (the Negative aesthetic urges, as the author calls them), viz. (1) the human individual seeking to upgrade himself by belittling, humbling down, suppressing and dominating others through the instruments of predation, parasitism and cunning, because he does not find opportunity to elevate himself with his own efforts through the proper media of the Positive aesthetic urges in the present set-up of human affairs; (2) mass-genocide through warfare; (3) hate and envy; (4) superstition; (5) the literature and arts of the grotesque, the monstrosity and pessimism; (6) autocracy and imperialism; and the like. The human history so far has been dominated by these ill and ugly human behavioral patterns and has consequently been chararterized by envy, rivalry, conflicts and clashes between personalities and personalities through the instruments of predation, parasitism and cunning for an ultimate goal of attaining the sole mastery of the world in which none of them, neither a Sargon or a Darius, nor an Alexander or a Napolean, could succeed.

The author therefore calls it the Civilization of Subhumanity, in contrast to the Civilization of Greater Humanity based on the pure productive economy of agriculture, dairying and chemical foods involving no destruction or parasitism of life-forms under which the human inner development receives its proper energy and the passage through the Possitive aesthetic urges, becomes open to it, with the result that every human individual

gets full opportunity to develop himself and demonstrate his inner uniqueness to the society for his inner relief. The present Civilization of Subhumanity is dragging the human species with which the phenomenon of life has attained its fulfilment as well as the climax of its development, towards the tragic extinction through suicide or otherwise. It is futile to save the *Homo sapiens* or to solve his vital problems with the tools of this Civilization of Subhumanity and within its own framework. It is why all exhortations, reforms, appeals, advice, ethics, slogans, satires, vows, taboos, warnings for condemnation to the hell in the after life, and all the measures of suppression and oppression in order to improve or change the mankind have failed throughout the history.

The nature has its own way of curing and correcting its ills. Man continued the predatory economy after successfully tiding over the crisis for survival with its assistance during the First Glaciation of the Pleistocene Period some seven lakh years ago from the time of the Australopithecus who remained herbivorous in Indonesia and East Africa and turned omnivorous elsewhere in Africa, down to the Upper Palaeolithic *Homo sapiens* of the last glaciation. The predatory economy still dominates the present human economy, which is just a mixture of the two, through fishing, slaughtering and various means of exploitation. It is why the mankind is still in the state of Subhumanity. Those Indians who practise ahimsā are not the exceptions, because though they do not kill other animals they still kill, injure and exploit each other. However, by 8000 BC when the Pleistocene gave way to the present Neothermal period of the earth-history and the last glaciation began to recede the polewards giving rise to the Afrasian Desiccation in North Africa, Middle East and Inner Asia in the Old World, the early fishing peoples of Southeast Asia invented to produce the food themselves by successfully experimenting with the root-planting with dibble and then developing the shifting burn-and-slash cultivation or horticulture. These pioneers were mainly the matriarchal Austric-speaking fishermen-ancestors of the South-East Asians and the Nicobari-Khasi-Santal-Munda-Baiga-Korku-Bhil-Koli group of the Indians, who had earlier tamed the dog and later the pig; worshipped the Mother-goddess, the phallic emblems, the serpent and aquatic animals; chewed areca and betel leaves and their women blackened their teeth; carried goods by balancing them on a shoulder pole. Thus the productive economy first arose in the human process and the nature in this manner began to work its way to correct an ill which has so far been jeopardizing the interests of the inner man (this was the first stage of the process in which man innocently turned towards productive economy of non-violence; in its second stage man becomes conscious of the fact of symbiosis that he should not destroy the life; and in the third stage he implements it). The Southeast Asians deserve further credit for having diffused the productive economy all over the world together with the dog, the bow and arrow, the ground stone tools, and later the pig, from the Archaic America in the east across the Pacific and the Indian Ocean to the Pre-pottery Neolithic of the Atlantic Coast of Africa and Europe by 7000 BC.

The early pattern of the productive economy bifurcated itself into two realms in answer to varying climatic conditions. In the realm stretching from the Americas westwards to the Gangetic valley was developed the horticulture of rice and maize, but the supplementing economy lacked dairying which was compensated by fishing and the related technology had no devices employing the rotary motion. In the contrasting realm lying from the Atlantic coast eastwards to the Indus valley the agriculture (plough-cultivation) of wheat and

barley that generally needs a rainfall under 100 cm or 40' in comparision to rice which requires above this level, was developed by the patriarchal peoples speaking the languages of the Hamito-Semite, the Sumerian, the Indo-European, the Asianic, and a few other families. They had dairying and slaughtering as the supplementing source of food and their technology had the devices of rotary motion (spindle, tournette, lathe, carrier wheel, etc.). The critical region across which the 100 cm isohyet passed separating the two basic realms of the productive economy was in ancient times occupied on the Indo-Gangetic Divide by what was later known as Kurushetra lying between the Sarasvati, now dried up, and its tributary the Drishadvati (at present the dividing line is marked by Chunar near Varanasi). No sooner than the productive economy was stabilized, challenges began to compel its followers to find out newer and newer homes. These were the soil-exhaution under burn-and-slash cultivation (horticulture) in the Indo-Pacific Realm, and the advancing Afrasian Desiccation in the Indo-Atlantic Realm. Lying strategically between the two realms, the vast Indian subcontinent stretching north-south from the Tien-Shans to the Cape Kumari and east-west from the upper reaches of the Mekong and the Indo-Burmese hills to the Helmand Depression and the Dasht-i-Tahlab, with its rich resources in perennial water, cultivable land, pastures, forests, minerals, animal-life, the effective protection against the invasions and the Afrasian Desiccation afforded by the lofty Himalayas to the Indo-Brahmaputra Plain and the Deccan Plateau, and the authority and the command on the Indian Ocean since the beginning of history in which ecological respects the other cradles of civilization, Egypt, Iraq and North China were not very lucky, offered a permanent shelter to both the communities. Here lies the key to the Indian history. The result was that the peoples after peoples belonging to the two communities (the Indo-Pacific embracing the inhabitants of America, the Pacific Basin, the Southeast Asia and the Ganga-Brahmaputra valley in India : the Indo-Atlantic included the speakers of the Bantu, the Hamito-Semite, the Indo-European and a few other linguistic families) began to enter India both from the east across the eastern hill-passes and the Bay of Bengal, and from the west through the North-Western passes and the Arabian Sea, in intermittent waves and were later joined by the Dravidians from the south and the Tibeto-Burman speakers from the northern sector of the Indian subcontinent. The scene of this first international synthesis of the human history was the Sarasvati basin to which the Indian tradition attaches the highest sanctity and thus began to develop an international and universal institution known generally as the Indian Civilization.

The process of the great synthesis is well-documenced in literature, art and mythology. The supreme deity of Hinduism, the dark-complexioned Narāyāṇa, the god of the deep; the cosmic serpent S'esha; the Ocean-churning; the Boar-Incarnation; the Stupa-structure, etc., are, it may be repeated, the Pacific elements. The sanctity of the cow is an African Bantu institution which India has received through Egypt. The doctrines of non-violence (ahimsa), the karma (actions in one life which affects the next life), the immortality of the soul, and transmigration (samsāra); the symbolism of lotus; the conception of the Yama-loka, all being the pillars of Hinduism, are indeed the Egyptian elements and thus Egypt stands parental to the Hinduism. The gods Varuna and Indra; the Flood Legend; the Sāvitri-Satyavān story; the Vedic sacrificial rituals, the priestly hierarchy and Vedic hymnology are of Sumero-Semitic derivation. The Indian mythology has elevated the Tibeto-Burmans to the celestial status, as the Yakshas, the Gandharvas and the

Kinnaras. The absorption of the Dravidian retroflex sounds separates all the Indo-European languages of India called the Indo-Aryan from the rest of their family. The subsequent development in which the Indian Civilization was enriched by further Semitic contributions through the Islam and Christianity are well known. Thus the Indian Civilization has been growing as an institution of international and universal character which did not destroy or suppress the traditions of coalescing cultures but re-organized them into a smoothly-working social machinary. The Indian Civilization reached its climax, or in functional-historical terms, the Stage of Cyclical Conquests during the second millenium BC when the Indian princes conquered the Middle East as the Kassites in Babylonia (1746-1171 BC), the Mitannians in Assyria (1525-1250 BC), and the Hyksos in Egypt (1720-1570 BC), with their new weapon the horse-drawn war-chariot and ruled their benevolently for centuries.

The second stage in the natural process for man to return to his proper bioethical standard in respects of food and behaviour, after the first stage in which man began to turn innocently to the productive economy of non-violence, is marked by the conscious realization on the part of man of the sanctity of life or the bioethical principle of symbiosis. It began in Egypt during the Pyramid Age (2778-2300 BC) before Mohenjo-Daro flourished on the Indus. "I satisfied the wolves of the mountain and the fowls of the sky with food", "Never have I done an act of violence towards any person," "I gave bread to all the hungries of the domain", were the confessions and utterances of Egyption nobles of the 27th century BC. But non-violence could not develop further in the land of the Nile for the same reasons which defeated the Akhnaten's mission of non-violence (1380-1363 BC), the predecessor of Tut-Ankh-Amun. The development expressed itself through the rise of the principle of 'God's Mercy to Man', and the conception of 'Rahm' in the Semitic religions of Judaism (sect of Assenes), Christianity (*The New Testament*, St. Mathew, 18, 23-25; St. Luke, 6, 36, etc.), and Islam (*The Holy Quran*, XVII, 84; XXXIX. 54, etv.); but adverse economic conditions turning bad to worse on account of the advancing desiccation in North Africa, Middle East and Inner Asia causing deterioration of agriculture and more and more dependence on pastoralism for dairing and slaughtering, did not promote its further course in the Middle East. Practically all the major ancient Middle Eastern institutions and missions had therefore to turn to the suitable Indian environment for their further development and fulfilment, and so did, indeed, the non-violence. Ikshvaku, Aila, Yayati, Nahusha, Mandhata, Rama and and many other Puranic rulers observed non-violence and abstained from animal-diet during a particular period of the year, according to the *Mahabhorta*, Anuśasana,-parva, CXV, etc. The *Gautama*, VIII, 24, includes 'compassion for all beings' as one of the forty duties of an Aryan; and *Manusmriti*, V, 44-51, too, recognizes *ahimsa*. But even under the Buddhism, it could not be implemented fully, probably, because the productive economy of the period could not help the cause.

The third stage in which *ahimsa* became a compulsory obligation was inaugurated by Pārsha, twenty-third Jain tirthankar, in the ninth century BC, but it failed to spread to the villages and to reach the masses, because the agriculture that involves killing of earth-worms and other organisms is discouraged by the Jainism.

The *ahimsa* began to reach the masses since the time of Adya Shankarāchārya when Dravidian S'aivism and under Ramanuja the Dravidian devotional cults began to dominate the Indian religious scene and thus has indeed, but innocently, dawned the Civilization of Greater Humanity. All the benevolent institutions pioneered by the Indo-

Pacific and the Indo-Atlantic communities, which could not be pursued further for geographical and historical reasons, achieved their fruition when the two great communities to which can be traced the origin of all the civilizations of history listed by Toynbee and others, fused themselves into the Indian community and pursued them further in comparatively more resourceful and peaceful Indian environ which has still been growing as an institution of international and universal character. The greatest crisis of survival it has faced was the British challenge. They knew how to kill a civilization non-violently in favour of their own. They imposed upon the Indian student an alien education to initiate him to an alien culture with which he had no inner link through an alien linguistic medium teaching him to hate his own civilization and heritage with the help of a wrong history of India reconstructed through wrong methods, with the result that a race of narrow-minded over-ambitious predatory and parasitic parrots, puppets and pages of the alien Anglo-American culture arose in India. Indian Civilization has overcome this great menace by the large majority of the Indian population having remained illiterate. It has thus survived all the challenges of the Subhumanity. The part of India that lies east of the ancient Sarasvati or Ghaggar-Hakda to Varanasi in one direction and along the Satpuras to Saurashtra in the other, occupying Hariyana, U.P., Rajasthan, M.P., and Gujarat wherein the large majority of the population observes non-violence and abstains from predatory economy and animal-diet, forms at present the cradle of the world's coming Civilization of Greater Humanity. If restraint, together with practicable non-violence, is a criterion the four warrior-peoples, the Jats, the Pakhtuns (Pathans) who have adopted the passive resistence, the Gorkhas or the 'Protectors of the Grazing Life', and the Baluchs may well claim the top position in the new scale of humanity.

The Civilization of Subhumanity in which the inner individuality of a Sargon of Agade, a Thutmosis III, an Assur-bani-pal, a Cyrus, an Alexander, a Caesar, a Changez Khan, a Hulaqu, a Cortez, a Pizzaro and a Nopolean could not find opportunity for its development through the normal course of the Positive aesthetic urges on account of the predatory economy of hunting, fishing and slaughtering being unable to provide the requisite energy to their inner mechanisms, has been blood-stained and too ugly.

In the fourth stage of nature's way of correcting the human ills man becomes conscious of his responsibility and himself takes over from the nature his comfortable transition from predatory economy of violence and exploitation to productive economy of non-violence.

We have cursorily surveyed the state of affairs of both the aspects of the human personality, from the angle of the interests of man's unhindered future progress on the path to his Ultimate Goal as conceivable presently. We have discovered that the real issue at this critical juncture is to provide facilities to every human individual under which he himself may take care of the production of his own requirements for his twofold development with the aid of science and technology in a society offering him a voluntary membership. We have seen that during our history since the rise of agriculture the nature is working its way to bring about a balance in the human affairs, and we have already passed three phases of the process. The fourth phase now requires the human initiative.

The author has divided the course of the human process into five bioethical successive levels: the Protohumanity (herbivorous hominoids); the Subhumanity (man

in predatory consortism with all the life-forms, including his own species); the Humanity (transitional between the Subhumanity of our own times and Greater Humanity during which man achieves symbiotic mutualism with his own species and domesticated animals: permitted to eat the wild-life and fish), the Greater Humanity (in its first phase man gives up the wild-life, in the second the aquatic life, and in the third the non-edible vegetation: in the last phase he achieves the pure productive economy); and the Superhumanity (having more and more relief from the cardinal grievances, man becomes able to reach the stage leading to the Supraconcious level of Sorokin, the Gnostic of Aurobindo, the Brahmaloka of Radhakrishnan and the Ultrahumanization of Chardin).

So we are today in the bioethical stage of Subhumanity. The author offers for consideration what he calls the XXIst Technoeconomic Stage of the human history {326-I} for man's morphosis from Subhumanity to Greater Humanity through the transitional Humanity. Man has a fundamental right to live if he allows others to do so and in the former case he has also a fundamental right to own for his use the natural resources of the planet according to his share.

The pattern of the emerging civilization of Greater Humanity inaugurating a new *manvantara* (aeon) will be characterized by altruistic activities, an unprecedented efflorescence of fine arts, literature, science and technology, sports and festivities in a society that will have no class hierarchy, exploitation, and politics. The Greater Humanity is now bound to come because history is driving us towards it, and no wonder if we find ourselves so shortly at the threshold of the coming *manvantara* of Greater Humanity of which Akhnaten, Krishna, Moses, Parshva, Zarathushtra, Confucious, Buddha, Jesus Christ, Muhammad and Quetzalcoatl have been the forerunners.

INDRAS

LOST SARASVATI

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A WORD FROM THE AUTHOR

The author has been engaged in his researches into the human institutions and the human past for more than two decades and these are being presented here synthetically through his *magnum opus*, the **Lost Sarasvati.**

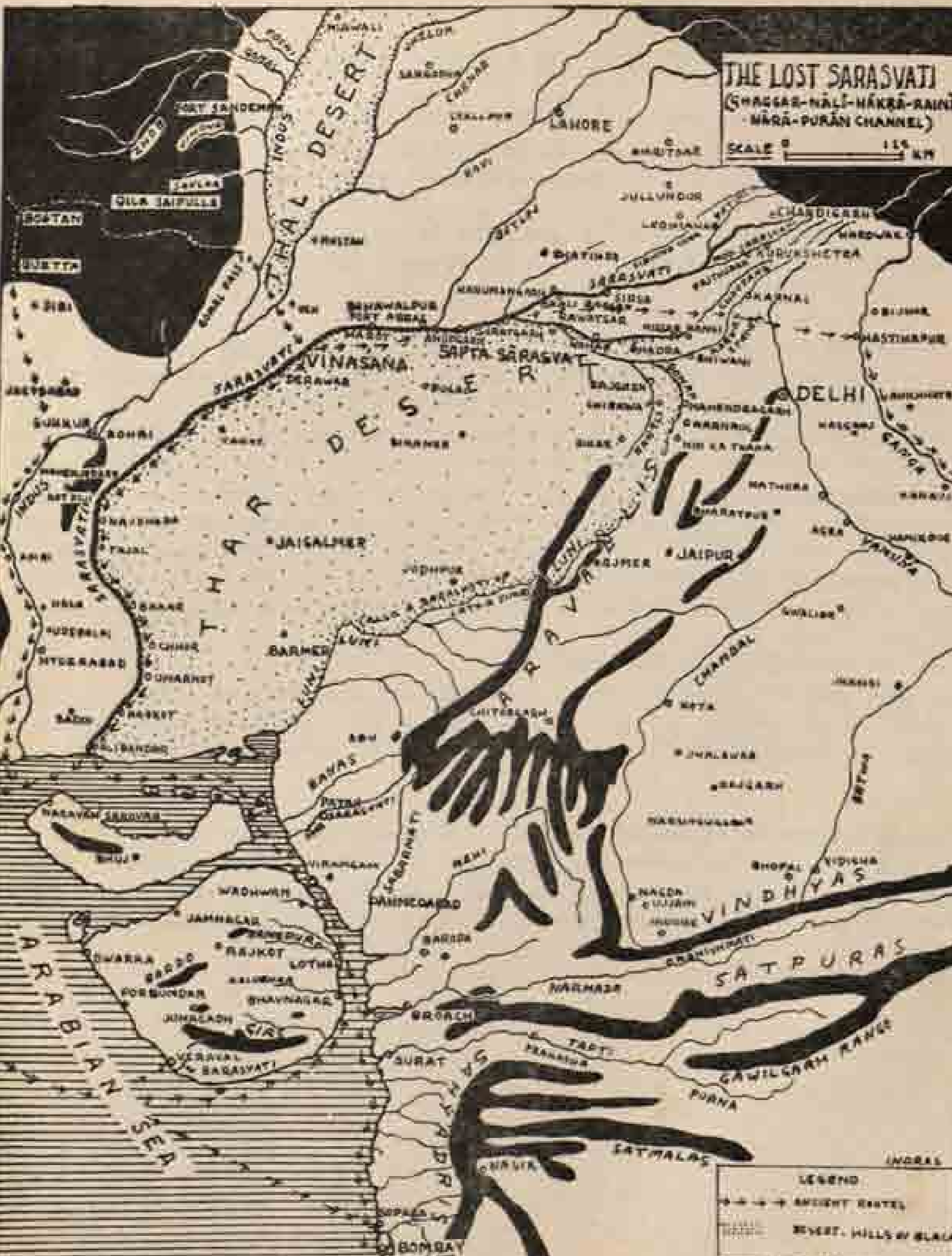
On behalf of the Department of Archaeology & Museum, Sardar Patel University and on his own behalf, the author thanks the Ministry of Education, Government of India, for their generous grant which could cover the entire cost of the publication of this work.

The entire work of preparing the text of the **Lost Sarasvati**, looking after the correspondence, making arrangements for its printing and publication, preparing maps, etc., had to be done single-handed by the author himself under certain extraordinary handicaps, for instance, want of any help clerical, technical or otherwise, etc. At times even menial help was lacking. To add to this was the indifferent health of the author. The work again had to be accomplished within the stipulated time. The writing and printing proceeded almost side by side allowing very little scope for meticulous planning, a thoughtful and systematic presentation of facts covering almost the whole range of human history, correcting proofs with lynx-eyed precision, etc. The author sees no possibility, at least under the existing conditions, of bringing out a revised edition of the **Lost Sarasvati.**

It may be mentioned here that the author himself and not the University nor any other institutions connected with the publication of this first edition of this work is responsible for all the statements and the expressions of opinion contained in this work.

The author thanks Shri Chimanbhai D. Patel, the Manager of the University Press, Vallabh Vidyanagar, and his staff, whose co-operation and interest have been of inestimable help. Lastly the author thanks all those who have given him different kinds of help and whose names cannot obviously be mentioned here for want of space.

The Author



The Sarasvati and the Ancient Coast-Line of Gujarat

LOST SARASVATI

I

THE SARASVATI BASIN AND ITS STRATEGY TO HISTORY

NEW HISTORIOGRAPHY

1-I. The present is the fruit of the past, and therefore the planning for a better future and its execution requires a thorough study of history; but not that type of history which projects just a few facets of the social process. The majority of our present works and writings on the human past elaborate and emphasize the political facet alone. We need for such a planning the picture of the social process in all its aspects as patterned by its mechanics in the course of history. We have still to reconstruct such a picture of the past. Better and better historiographical methods are being evolved in order to reach the goal. Before the development of palaeography and archaeology the critical historian had at his disposal the literature (including documents) and linguistics for the reconstruction of the past. Palaeography hardly carries us to the times prior to the beginnings of the political history during the Bronze Age, when, as a result of the Urban Revolution, the city-states were formed in the valleys of the Nile, the Euphrates, the Indus and the Hoang-Ho. The development of archaeology and human palaeontology carried in their turn the story to the remote ages of the human origins. It is on the basis of these subjects that our present Indian history has been reconstructed. But what this history depicts is not the whole picture of India's past.[1] The Indian historiography can hardly be regarded as having recorded satisfactory progress since the discovery of Mohenjo-Daro.

2-I. The subsequent developments in which all the above subjects (literature, historical linguistics, palaeograply, archaeology and human palaeontology) are geared to anthropology, human ecology, psychodynamics, dietetics, etc., giving rise to the functical-historical technics from which we are able to trace more or less an overall panorama of the human process have still to enter the domain of Indian historiography. This has indeed to be done sooner or later and in that case it is obvious that the present picture of India's past might undergo some modifications and in that course some hitherto unknown and unexpected facts might come to the light. The author of the present work has tried in its contents some preliminary efforts in this direction, and in doing so if some unforseen and perhaps startling facts of India's past are emerged, the reader should not be too surprised.[2]

1—The term 'India' stands in this work in the sense of the subcontinent during early times, as already stated in the Preface, i. e., running from the Tien-Shans in the north to the Cape Kumari in the south, and the Upper Mekong in the east to the Dasht-i-Tahlab in the west.

2—For a review of other approaches, Basham, A. L., 'Modern Historians of Ancient India,' *Historians of India, Pakistan & Ceylon*, ed., Philips, C. H., 1961, pp. 260-93.

3-1. The following is a list of the major inventions which have played an important role in shaping man's social history so far :—

(1) The development of a lithic technology for manufacturing tools (the ' Levalloisian flake ' and the ' blade ' were important inventions in this field) in order to win food and protection from the environment; (2) the fire-making; (3) the articulate speech and language; (4) the momentous transition from the nomadic food-gathering of the predatory economy to the sedentary food-producing stage of the productive economy by means of the domestication of plants and animals that began by 8000 BC, (5) metallurgy, (6) wheeled-vehicles, (7) the writing, (8) mathematics, etc., which led to the Urban Revolution by 3000 BC; (9) paper (10) gun-powder, (11) printing press, (12) the compass, (13) the optical instruments, etc., and lastly, (14) the generation of mechanical power which has inaugurated the Age of Machine or the Industrial Revolution. The Subsistence Revolution through the domestication of plants and animals marking the introductitn of the productive economy which has changed the course of the human process, stands out as the most momentous event of the human history, for without it the development of civilization could not have taken place and the humanity would have continued to be in the nomadic wild state down to our own times. It has inaugurated the era of the settled life in the human history. It has further placed in the hands of man the skills and devices for producing his food himself, without winning it directly from the nature. Nay, it has done something more. It has enabled man to produce more food than he needs for himself and his family. It has thus brought about the Urban Revolution, which in its turn has given rise to a three-fold class-structure in the society { the producer, the parasite and the predator, 326-1 }. Ever since the beginning of the present post-glacial Neothermal or the Holocene Period of the history of the earth by 8,000 BC, we have been in respect of the subsistence economy mainly in the Age of Agriculture and are likely to be so for some centuries to come, because the makind has not yet been able to find out a better alternative in this respect through science and technology. However, the millions of people are still living in the stage of predatory economy in the forests, the tundras and the deserts.

THE COMING OF HOMO SAPIENS

4-1. Man belongs to the genus Homo (*Homo erectus* and *Homo sapiens*) in the animal family *Hominidae* (*Ramapithecus* of the Siwaliks in India, the *Australopithecinae*, and the *Homo*), which comes under the sub-order *Anthropoida* (Apes, *Hominidae* and *Homo*) of the order *Primate* among the *Mammalia*. His first discernible archaeological records date back to the Villafranchian or the earliest phase of the Pleistocene (c. 10,00,000-7,00,000 yrs. BP) period of the Quarternary Era (10,00,000 onwards : the Pleistocene which passed through four phases of glaciation after the Villafranchian, viz., the Günz, the Mindel, the Riss, and the Würm, each alternated by a warm interglacial : it was succeeded at its end, c. 10,000 yrs BP, by the Neothermal or the Holocene still continuing : for the phases of the Neothermal, Fn-7, p. 15), as a maker of stone-tools in his *Homo erectus* (Java Man, Peking Man, etc., distinct from *Homo sapiens*) ethnic stage. *Homo erectus*, to whose credit go the inventions of the lithic tool-technology, the fire-making, and the development of language, remained nomadic wild hunter

and food-gatherer all throughout his career down to the Göttweig Interstadial (c. 40,000—29,000 BP) of the Ultimate or the Würm glaciation (c. 70.000 — 10.000 BP) of the Pleistocene, when he disappears for ever from the scene of history, passing his heritage to his successor *Homo sapiens*. *Homo sapiens* sub-species to which all the living human types, namely, the Negroid, the Australoid (Austric – speaking hill – tribes of India, like the Nicobaris, the Khasis, the Santals, the Mundas, the Korkus, and many Hindu castes), the Mongoloid (in India the speakers of the Tibeto – Burman and some Indo – Aryan speakers residing in the Himalayan and adjacent areas), and the Caucasoid (the speakers of the languages of the Indo – European, the Dravidian and the Semitic families) belong, has though its roots earlier in such Middle Pleistocene types as those represented by the Heidelberg (Germany), Swanscombe (England), Sidi Abd er-Rahman (N. Africa), Kanjera (E. Africa), and other fossils, appears dramatically with the cave – art so familiar to us from France, Spain and Italy, and a very typical stone – tool equipment known as the 'Blade' industry, which is fundamentally different from the earlier Palaeolithic implement types comprising the Core, the Flake and the Chopping-tools. The earliest known Blade industry has come from Israel where its antiquity goes back, indeed, to Göttweig Interstadial. In India we do not know definitely the date of the Upper gravels of various river-valleys, for instance, those of the Pravara, in which the oldest known Indian blade industry ('Middle Stone Age')[3] occurs. It may well be earlier than its Israeli counterpart. This somewhat sudden change of the tool type was probably devised to meet the challenge of new environmental changes, to which we can trace the roots of the food – producing economy. All these earliest *Homo sapiens* communities are known as the Upper Palaeolithic peoples. Besides their cave-art in certain areas, the typical Blade industry, they developed also the bow and arrow, invented the burin and the needle, and tamed the dog. In certain areas where the fishing offered better opportunities, for instance, in parts of Europe and in the humid Southeast Asia, they devised the canoes and the fish-hook.

5-1. The Upper Palaeolithic communities were the first human beings to have occupied the vast core of the Eurasiatic continent up to the Arctic Ocean. They crossed the Bering Strait, and entered America, where they followed the game trails southward as far as the Tierra del Fuego at the southernmost tip of South America by 8760 ± 300 BC [Coon, C., *The Origin of Races*, 1963 p. 478]. We cannot date precisely today the advent of man into America. However, it is certain, that he first set his foot on the soil of Alaska some thousand years before this carbon-date. "Another lead regarding man's arrival in America," writes Coon," is language. We observed that in Australia and Tasmania all aborigines speak or spoke languages of a single family, to which Papuan is probably also related. On glottochronological grounds, this unity probably sets a ceiling of 20,000 years on the first settlement of that continent and those islands. In the two Americas, no one has yet decided exactly how many linguistic stocks the Indian languages comprise, but it may well be ten or a dozen.... I believe that we can postulate with safety that America was first settled some time in the half of the Wisconsian or Würm glaciation, contemporaneously with the Upper Palaeolithic peoples of Europe" (Ibid, p. 479). Recent studies which Prof. Morris Swadesh, who has developed the Glottochronology, a new dating method, shed some new light on the linguistic aspect of the early Americans. "However, on this occasion", states Swadesh, "we were engaged in a broad comparison of Amerindian

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3—Soundara Rajan, R. V., *The Indian Middle Stone Age – A Note on its Personality & Nexus*, 1963: Allchin, Bridget, 'The Indian Stone Age Sequence,' J. Roy. Anth. Inst. of Great Britain & Ireland, LCIII, 2, 1963, pp. 216-20.

linguistic stocks and had found evidence that quite a number of them may go back to a form that was common perhaps 15,000 years ago. It was striking then, that similarities with Indo-European were shown by elements and features that are very widespread in America and which seemed, because of their spread and their consistent phonology, to go back to the ancient American protolanguage which we are reconstructing." (Swadesh, Morris, 'On Inter-hemisphere Linguistic Connections', *Culture in History, Essays in Honor of Paul Radin*, ed., Diamond, S., NY, 1960, pp. 894-5). The issue it poses is that there must have lived somewhere in the northern Asia the Indo-European-speaking people much before 15,000 BP, prior to the formation of the ancient American protolanguage. The time falls within range of the late Würm glaciation and Upper Palaeolithic age. Since it has been demonstrated that the poles have been shifting and the North Pole was situated south of Greenland at the beginning of the Quarternary (Gammow, G., *Biography of the Earth, its Past, Present, and Future*, Lon, 1959, pp. 174-7), it may well have been located some distance away from its present position, leaving much of Siberia not so cold as it is today, during the Upper Palaeolithic times.

AFRASIA AT THE END OF THE PLEISTOCENE

6-1. During the third cold phase of the Würm called the Würm III, which was last of its series, the existence of the ice-fields caused a shift in the belt of rain-bearing Westrlies, the cyclonic storms, of some fifteen degrees southward in the northern hemisphere. Africa, the Mediterranean, Asia Minor, India, Inner (Central) Asia, and north China in the Old World experienced the last of the Pleistocene 'pluvial' corresponding to the 'glaciation' of the higher latitudes, including that of the Himalayas. All the desertlands of today in the north Africa, the Middle East and the Inner Asia—from the Sahara to the Gobi—were forested and well-watered areas. In north Africa there were lakes in the Kharga oasis and the Fayyum depression now almost dry. Larger lakes then existed in Ethiopia and East Africa. The Dead Sea had a length of two hundred miles having its level some 1500 above its present surface. All the lakes of the western Asia, viz, the Tuz Gölü and the Van in Asia Minor; the Rezaieh (Urmia), the Namak, the Niriz and the Namaksar were much larger and the two great deserts the Dasht-i-Kavir and the Dasht-i-Lut were, indeed, inland seas in Iran. The Caspian and the Aral Seas were united, as were the Black Sea and the Sea of Azov. In the Indian subcontinent the Hamun-i-Helmand, the lakes of Kashmir, Kumaon, Little Tibet, and of adjacent areas covered extensive dimensions. Much of the present deltas of the Nile in Misr; the Euphrates, and the Tigris in Iraq; the Indus, the Luni, the Ganga (Ganges), and the Brahmaputra rivers, as also the Ranns of Kutch (Kachchh) and the Bhal in India were under the waves of the sea (The Indus, the Ganga, and the Brahmaputra are the disrupted fragments of a great prehistoric river called the Indobrahma by geologists: it flowed from Assam to the Punjab where we find today the foothills of the Himalayas known as the Siwaliks in their western part. The Indobrahma was dismembered into these rivers as a result of the tectonic movements which occurred by the end of the Second glaciation of the Pleistocene about 2,00,000 years ago). Between the Indus and the Ganga there flowed a third river referred to as the Sarasvati in the ancient Indian literature. It flowed independently into the sea that formerly coverd the Ranns of Kachchh. It became dried up by the end of the Bronze Age or rather the Chalcolithic age in India, during the later half of the second millenium BC. Its location possessed great environmental significance in regard to the overlapping of early peoples' movements in northern India, from both the east and the west. A great process of acculturation was resulted

from it. It is why the theme of the present study centers upon the Sarasvati, known after its disappearance as the 'Lost River of India'.

7-1. The glaciations locked up in glaciers and ice-sheets the volume of water, with the result that the ocean levels were dropped and the lands under shallow water came over the surface of the sea. It has been calculated that during the Würm glaciation the sea level fell by well over two hundred feet. Such a fall led to the emergence of landbridges between areas now isolated, enabling men, animal, and vegetation to move freely between them. A bridge linking Siberia with Alaska has already been mentioned. Japan was united with the Asian mainland; Tasmania and New Guinea with Australia; Borneo, Java, and Sumatra with Malaya by the emergence of the Sunda shelf [Hawkes, J., 'The Natural Stage', *History of Mankind*, *I*, UNESCO, 1963, p. 24]. The case of India is complicated in this respect.

THE AFRASIAN DESICCATION

8-1. By 8000 BC the Pleistocene period, together with its last glaciation the Würm, came to a gradual end, with the result that the course of the Atlantic rainstorms which formerly passed over the Sahara across the Middle East to the Inner Asia, began to shift northward, on one hand, rendering these areas subjected to an aridification; and covering, on the other, vast regions with the loess in China, Mongolia, Central Asia, and Russia, the central Europe, Iraq, Iran, India (Kashmir, Punjab, Upper Gangetic Doab, Rajasthan and Gujarat, north of the Narmada or the northern Gujarat), which the receeding glaciers were releasing. From this process of aridification India was generally saved by the Himalayas and the Monsoons. The Thar desert owes its origin to the disappearance of the Sarasvati and withdrawal of the marine conditions from the Ranns of Kachchh, whose presence tempered the climatic conditions which attracted more monsoon rains to fall on the Indus basin (truly, the Indo-Sarasvati basin as we shall call it henceforward). The humid Southeast Asia was not apparently subjected to any substantial climatic change. This state of affairs created two diverse sets of environmental conditions in the subtropical Old World, namely, those prevailing already in the Southeast Asia, and those which the aridification or the desiccation began to bring about in the northern Africa, the Middle East and the Inner Asia, i. g., the Afrasian Arid Belt (this term will be employed henceforward for all these desertlands). It was under the conditions of the latter climatic change or the desiccation that the most important economic achievement of the mankind, i. e., the domestication of plants (farming or cultivation) and animals (herding or pastoralism), was destined to take place in the next stage of man's food-quest.

RISE OF PASTORALISM

9-1. In the course of the incipient desiccation the forest-cover deteriorated into the savannah (grassland with some trees) in the Afrasian Arid Belt, and consequent upon this change, both flora and fauna also changed. The dog had already been domesticated. Since the invention of the fire during the Middle Pleistocene (Choukoutein caves in China) about half a million years ago, the domestication of the dog was man's second step in harnessing the extra-human sources of energy. By pursuading two or three other men to help him, a man can double or treble the amount of his muscular energy. A dog can run faster and this is useful in the hunt. The dog can find and flush birds, surround and drive deer and antelope, run down and kill some game, and guard the body of a large animal until his master reaches it. In the tundras

it can draw the sledge. The domestication of the dog may well have taught man as to how to tame the herbivorous animals roaming about the developing savannahs in the Arid Belt. The order of domestication seems to have been: First the scavengers, such as the dog; second nomadic animals such as the reindeer, goat and sheep; third the beasts for which a settled life is essential—cattle and pig; finally animals that can be used for transport including the horse, the ass and the llama. While the dog was certainly domesticated in the Mesolithic times, and the horse not until after the primary Neolithic period, the validity of the distinction between the other two classes is very dubious. However, it will be remembered that at the Belt Cave in northern Iran domesticated sheep and goats were found in the earliest, pre-pottery Neolithic occupation, dated by Carbon-14 to the first half of the sixth millenium BC, while the pig and the cattle did not appear until the later Neolithic occupation dated to the second half of the same millenium" (Hawkes, Jacquetta, *History of Mankind*, *I*, 1963, p. 280]. The domestication of the camel marks deterioration of the savannah into desert. It finds references from the later half of the second millenium BC onwards.

10-1. The woman plays practically no economic role in the pastoralism, in contrast to her part in the hunting-gathering-fishing stage where man remains mostly outdoors for economic pursuits, with the result that the woman presides over domestic affairs. This has reflected in both social organisation and religion. A pastoral community is patrilineal having cults and religion with predominantly male deities.

THE DAWN OF SUBSISTENCE REVOLUTION

11-1. Archaeology has its limitations. Equipment for human living is made largely from perishable organic materials. Traces of the equipment of nomadic hunting-gathering peoples who obtain raw materials from forest; of pastoralists whose needs in tools are meagre, except the weapons they need for defence and offence; and of the semi-nomadic horticulturists, hardly survive, except a few of their tools, if they are of stone or other hard and durable materials. It is, therefore, very difficult for us to reconstruct the history of the process of the transition from food-gathering to food-producing, if we insist on archaeology alone in this respect. Here first ethnology and next botany come to our aid. Archaeology ranks third as our helper.

12-1. The first farmers were probably the people who had begun to collect and store their staples long before they thought of cultivating them-for instance, the Indians whom the European settlers found living in Californian villages. They gathered acorns (fruits of oak), pinon nuts, and wild grass seeds, and put them away in basketry containers to eat during the winter. California has a Mediterranean climate: its wild products are similar to those of ancient Middle East and Inner Asia, where the archaeological remains of the stage of food-production reach a high antiquity. The Mesolithic peoples of these lands, who appear to have been the incipient farmers and the last of the hunters, must have stored acorns, seeds of various grasses, nuts, etc., in the same manner as do today the Indians of California. We may visualize from ethnological parallels that when the males were outdoors for hunting with which they remained engaged for the most of their working time, their womenfolk must have busied themselves, in the vicinity of their temporary habitations, with gathering water-cress, edible vegetables, nuts, fruits, fallen seeds of various grasses; and digging up roots and bulbs, etc. These leaves, bulbs, fruits and grass-seeds could also be cultivated around habitations. Among nonliterate peoples, for instance, the Yukaghirs of Siberia, the Yoruba and Boloki of

African forests and a number of Indian tribes of America (the Boro of South America, and the Kwakiutl, the Paiute, etc., of North America) the gathering and farming around habitation with a digging-stick or hoe (horticulture or shifting cultivation or jhuming of Assam tribes) are still the womens's job.

13-1. The plants that became the main basis of early cultivation, which our own civilization has inherited from our Mesolithic and Neolithic ancestors, were all of a kind in size, shape, condition, and ways of handling. Wheat, barley, and rice, the seeds of certain grasses furnish predominantly starches. Lentils, peas, beans, etc., furnish proteins. Flax, sesame, mustard, hemp, etc., furnish oil. Most of them have additional uses : hemp and flax as fibers, wheat and barley as straw for thatching houses and bedding down cattle, and the legumes for adding nitrogen to the soil. All of them come in the form of grains or seeds that can be dried and stored indefinitely. Thus they can not only provide food to last several years if enough is planted at once, but they can also be used as seeds after a number of years, should the crops fail in the meantime.

14-1 All the above factors worked in bringing about a change from food-gathering⁴ to food-producing,⁵ which event, on account of rapid changes it introduced into the social structure of man, is aptly called a revolution.

15-1. The credit for bringing about this Food Revolution or better we may call it the Subsistence Revolution, the key to the civilization, must go indeed to the woman.

---

4 - Food-gathering comprises the following three technics :-

(1) Hunting, (2) Gathering, (3) Fishing.

Communities that depend on hunting and gathering are highly diversified. Some subsist primarily through gathering fruits or other vegetable products and devote little time to procure animal food, for example, the Semangs of Malayan forests and the Northern Maidus of U.S.A. Other people rely heavily on fish. The central and southwest Pacific, as well as Southeast Asia, are populated by many communities fishing intensively. A hunter rarely support more than four nonhunters Hunters and gatherers are limited to an effective social organization comprising only the mobile band of about 50 persons. The yield from fishing is far more dependable than that from hunting, and on the sea sedentary village containing 1500 to 2000 people are met with along the North Pacific coast.

5 - Food-producing is classified into the following stages :-

(1) Incipient agriculture (*Milpa* or Burn-and-Slash or jhuming).

(2) Intensive manual agriculture (without plow ; hoe is used : ancient civilisations of Mexico, Central America, and Peru were based on this subsistence system. It seems to have arisen also among the Austric rice-farmers along the Bay of Bengal as we shall see later).

(3) Plow agriculture (practised with the help of animals : plow-using farmers are often called 'peasants' : hunting is mainly relegated to a sport : settled village life).

(4) Irrigation agriculture (classified into small-scale hydroagriculture and large-scale hydroagriculture, gives rise to urban life or civilisation).

(5) Mechanized agriculture.

(6) Large-scale pastoralism.

[Contd. p. 8]

TWO OLD WORLD CRADLES OF SUBSISTENCE REVOLUTION

16–1. As regards the location of the dawn of the Subsistence Revolution, botany has helped a great deal. Botanists have gone on many expeditions to various parts of the world in search of prototypes of cereals in their wild state, primarily with a view to finding out ways and means for plant-improvement through hybridization and selection. The results have helped greatly the cause of human hostory as well.

17–1. One of the old beliefs regarding the origin of agriculture is that cultivated plants came to man as a gift from the gods. Ousir (Osiris) was the Egyptian god of grains. In Babylonia Marduk presided our agriculture and goddess Nisaba over harvest. Greek Demeter represented fertility and cultivation of soil. In Rome Consus and Liber Pater were the devinities connected with sowing and fertility of fields, respectively. In Chung Hua (China) Hou Chi presided over cereals and in Nippon (Japan) Irani was the rice-god. Annapūrnā is the Hindu goddess of grains. India is the only country which has an ancient tradition about the transition from food-gathering to food-production through agriculture, brought about by an antediluvian (pre-Flood) king named Prithi Vainya [Appendix, Two].

18–1. Charles Darwin [*Origin of Species by means of Natural Selection*, 1859] and Gregor Mindel [*Experiments in Plant Hybridization*, 1865] referred in their works to the distinction between the wild and cultivated plants. Real scientific investigations into the origin of food-producing begin with the work of Alphonse de Candolle [*Origin of Cultivated Plants*, 1882, reprint 1959 NY, Hofner]. The greatest authority of our times on this subject is Prof. Nikolai I. Vavilov. [*Studies on the Origin of Cultivated Plants*, Leningrad, 1926 : *The Origin, Variation, Immunity and Breeding of Cultivated Plants*, 1951]. As President of the Lenin Academy of Agricultural Sciences, and Director of the Institute of Applied Botany, Leningrad, Vavilov had almost unlimited resources at his disposal. Vavilov has found that the distribution of plant species on the earth is not uniform. A number of regions possessed large number of varieties. A concentration and great diversity of heritable forms, certain endemic varietal characters, and presence of closely related wild or cultivated forms were considered as confirming evidence of probable centers of origin. Genetically dominant characters were believed to be indicative of original centers, while recessive forms were thought more likely to occur at the periphery of the basic areas.

Under manual agriculture villages containing about 20 families develop. A family of 5 Chinese can cultivate from 2 to 3 acres of dry rice-land by manual technics while a group of the same size in India can plow 16 acres of wet rice-land. The plow enables many potential workers to retire from food production, and the tractor still more. For every 1 person engaged in U. S. A. in mechanized agriculture 6 work in other pursuits. An American farmer can produce maize to feed enough livestock to supply over 300 townflock with meat and livestock products. However, this is not practicable everywhere. Pastoralism needs much more area. The same area under agriculture can feed many times more mouths than do the meat and dairy products. The pastoralism is bound to decrease with the increase of population for whom more and more land will be needed for cultivation, with the result that nonvegetarianism will go on diminishing.

19-1. Vavilov has identified the following eight primary centers of the origin of cultivated plants :

	Cereals & Legumes	*Vegetables & Tubers*	*Fruits & Nuts*	*Others*
(1) Chinese Center.	Millets Kaoliang Buckwheat Soyabean	Onion Radish	Pear Peach Apricot Litchi	Opium poppy Camphor Hemp
(2) Indian Center (Eastern part).	Rice Gram Urd bean Mung bean	Eggplant Cucumber Taro Yam	Mango Tamarind Banana	Sugar cane Cocoanut palm Sesame Tree cotton Oriental cotton Jute Black pepper Sandal wood Indigo Bamboo
(3) Central Asiatic Center. (including north-west India & Afghanistan)	Common wheat *(T. vulgare)* Club wheat *(T. Compactum)* Pea Mustard	Onion Garlic Carrot Spinach	Pistacia Almond Apple	Hemp
(4) Near Eastern Center. (Inc. Iran, Trans-caucasia)	Einkorn wheat (T. monococcum) Durum wheat Oriental wheat Persian wheat Rye Oats	Alfalfa Vetch Fenugreek	Fig Pomegranate Apple Pear Cherry	
(5) Mediterranean Center	Durum wheat Emmer Polish wheat Spelt Sand oats Mediterranean oats Lupine	Cabbage Turnip Lettuce Chicory Rhubarb		Black mustard Peppermint Caraway Hop Sage

(6) Abyssinian Center.	Abyssinian hard wheat Emmer Barley Sorghum Pearl millet African millet			Caster bean Coffee Myrrh.
(7) South Mexican & Central American Center.	Maize Lima bean		Malabar gourd Winter pumpkin	Upland cotton Sweet potato Arrowroot Papaya Cacao
(8) South American Center.	Starch maize Lima bean	Andean potato Edible nastertium Tomato Pumpkin	Guava Quinine tree Tobacco	Manioc Peanut Rubber tree Cashew Pineapple

20–1. Out of the above eight cradles of cereal grasses, six lie in the Old World. First two of the latter are associated with rice (the Indian Center, its eastern part), and the millets (the Chinese Center), and the rest four with wheat together with barley (the Central Asiatic Center which includes the northwestern India and Afghanistan, the Near Eastern center, the Mediterranean Center; and the Abyssinian Center). The wheat and the rice are the two chief cereals of largely the civilized Old World. The two do not normally grow under the same hydrological and climatic conditions. Two different cradles have therefore been located for the origin of agriculture in the Old World [Howells, W., *Man in the Beginning*, Lon. 1956, p. 177 ; Coulborn, R., *The Origin of Civilized Societies*, 1959, pp. 42–8 ; Coon, C; *The History of Man*, Lon. 1962, p. 126], which Coulborn has designated as the Old World Western Agricultural Region and the Old World Eastern Agricultural Region.

RICE

21–1. Rice in its cultivated form belongs to the species *Oryza Sativa*. Rice in husk after threshing is called 'paddy', the term being used in this sense in the Southeast Asia (*padi* in Malaya). It is Known as *dhānyam* in Sanskrit and *dhān* in Hindi. The 'husked' or 'hulled' rice is referred so as *loozein* in Burma, and *petyakhoelit* in Indonesia. It falls into two groups from the view–point of physical requirements of the plant. The most valuable varieties giving a very high yield and large grains is the 'wet paddy', which must be grown under swampy conditions; others referred to as 'hill rice' or 'upland paddy', which can, however, be grown on drier ground, provided that there is a fair rainfall and a long warm season. Water plays a very important role in the cultivation of paddy rice; the crop uses quantities considerably in excess of most other cultivated plants. Little rice is grown where the annual rainfall is less than 40" (about 1,020 mm). Irrigation water requirements seem to vary from 15" in more humid tropical areas to about 20" in northwestern area [Royen, W. van *The Agricultural Resources of the World*, NY, 1954, p. 83]. Heavy, hot–season rains ranging approximately

between the 200 cm. and 150 cm. isohyets are of paramount importance. Hence 'wet paddy' is most cultivated on coasts of seasonally healthy rain, and in flood-plains and delta locations. In the coastal plains of Peninsular India and South China, in the deltas and lowlands of the Ganga, Irrawaddy, Chao Praya, Mekong, Red and Yangtse river, rice occupies continuous areas. Outside these terrains paddy is more discontinuous, frequently arranged in narrow belts beside water-courses, but nearly everywhere identified with the lowest level of the landscape. In 1960 average national yield of hulled rice per cultivated acre was about 3,700 lb. in Nippon (Japan) 1,660 lb. in in Chung-Hua (China), 1,480 lb. in Indonesia, 1,485 in Burma and 1,170 lb. in India.

22-1. There exists in the world about 15 species of wild rice. *Oryza fatua* is the probable ancestor of the cultivated varieties of *Oryza sativa*. A. Chevalier and P. Viguir suggest two centers of origin, viz : *Oryza fatua* and species of *Oryza sativa* L., both of Asian origin ['Sur l' origine des Riz Cultive's; *C. R. Acad. Aci.* CLIX, 2,1937, Par.]. "*Oryza fatua*," as I. H. Burkill states, "occur in moist places from the Eastern Himalayas to Ceylon (Sri Lanka), and from the southernmost edge of China through Burma and Indo-China to Java. In the fields of western and southwestern India", he adds. "*Oryza fatua* is exactly like the annual *Oryza sativa*. In the Gangetic plains it is seen in a different form, but is still like *Oryza sativa* [*A Dictionary of the Economic Products of the Malay Peninsula*, Lon, 1935]. "According to Vavilov", as D. H. Grist observes, "the longer a group has been established in an area, the larger will be the number of species to be found there. He concludes that the wealth of forms and varieties of rice found in the southwest Himalayas which are closely allied to many Chinese varieties, points to this region as the center of origin of rice" [*Rice*, Lon., 1962, p. 4].

23-1. "There is no direct evidence", observes Forde, "to indicate whether rice was first grown as a rain crop from upland wild varieties or whether it began with the cultivation of the swamp varieties; there is nevertheless, a story presumption in favour of the latter. India is the probable home of its earliest cultivation". [Forde, C. Daryll. *Habitat, Economy & Society*, 1956, p. 426]. According to N. I. Vavilov ['The Problems of the Origin of Cultivated Plants and Domestic Animals as conceived at the Present Time.' *Pl. Breed. Abs.*, 1930], the longer a group has been established in an area, the larger will be the number of species to be found there. He concludes that the wealth of forms and varieties of rice in the southwest Himalayas points to this region as the center of the origin of rice. K. Ramiah, an eminent authority on rice, points out that the original homes of plants are characterized by the great diversity of forms, rich in varieties, and it is in India, Southeast Asia, and China that this diversity is to be found. All the Hindu scriptures, he states, mention rice and all offerings to God are given in rice, denoting its antiquity. He adds that some of the ancient Tamil *purāṇas* contain descriptions of particular varieties of rice which are to be used in certain religious offerings, showing that even in these ancient times varieties with definite characteristics were recognized and that Suśruta in his Ayurvedic *Materia Medica* recognized the differences among rices that existed in India, separating them into groups based on their duration, water requirements, and nutritional values (Ramiah, K., *Rice in Madras*, Mad.' 1937). "We do not know the country of origin of rice", states D. H. Grist, former Agricultural Economist to Malaya, "but the weight of evidence points to the fact that it originated in the continent of south-east Asia, spreading northwards in Asia

before the later movements of the Aryan dispersal, for the name is alike in Zend and Sanskrit and similar in Old Persian. From the mainland of the continent it also spread south and east through the Malaya archipelago with the flow of human culture. It was introduced into Indonesia by the Deutero-Malays when they immigrated there about 1500 B. C." (Grist, D. H., *Rice*, Lon., 1962, p. 5).

24-1. Even today there are localities in the Far East where the rice field is neither plowed, spaded, nor hoed. The soil may be thoroughly puddled and all the weeds destroyed merely by driving a caribou around in the flooded field, or his family may accomplish the same purpose by splashing around with their bare feet [Wickizer, V. D., *The Rice Economy of Monsoon Asia*, Stanford Univ. 1941, p. 15].

25-1. The rice does not find mention in the *Rigveda* [Ghosh, B. K. 'The Aryan Problem', *The Vedic Age*, gen. ed., Majmudar, R. C. Lon., 1952, p. 217], the oldest surviving Indo-Aryan work of c. 1500 BC, which refers to the *yava* or barley as staple. In the later *saṃhitas* of the Vedas, however, the wheat gradually gives place to the rice and in the *Atharva-veda* the latter is established as the common food grain of the people. Manu prescribes that offering to manes must be made in rice. "The finest rice and golden wheat abound in Ayodhya according to the Ramayana", as observes A. K. Yegna Narayan Aiyer, "the *Arthaśāstra* describes the cooking qualities of some varieties of rice and says that the *śāsti* variety of rice will swell five times in volume when cooked. The *Brihat-saṃhita* mentions many varieties of rice, *śāsti* (*sāthi*, Hindi), etc. In the Tamil classics references abound and relate to many interesting features of the crop. Rice is one of the eight kinds of grain. Buffaloes plough in the rich puddle . . . Superior red coloured paddy is cultivated on the Cauvery . . . The highest quality rice is the variety called *rajanna*, also *minmini* and also is the rice with the name of the bird 'anna' or 'haṃsa' or swan" [*The Antiquity of Some Field & Forest Flora of India*, Bangalore, 1956, p. 58-9].

26-1. "For 'rice', the oldest word in Indo-Aryan," writes S. K. Chatterji," is *vṛihi* which has Iranian affinities (a. g. Persian *birinj*, Old Iranian **verneja*, Pashto *wrize*, whence Greek *oruza*, and *briza*, and Latin *oryza*), and which may be connected with the Dravidian (Tamil) *arichi* < **arki*, *argi*. But in the New Indo-Aryan languages the common word for 'rice' is *chāwal*, *chaul*, and this would appear to be based on a Middle Indo-Aryan *chāmala* (cf. the Old and Middle Indo-Aryan forms *chāma*, ā-chāma) meaning 'rice', as well as 'food', and this *chāma-la*, in its original sense of 'food', might be very well connected with the Kol or Muṇḍā root *jom*, 'to eat' [Chatterji, S. K., 'Race Movements and Prehistoric Culture', *The Vedic Age*, Lon. 1952, pp. 149-50]".

WHEAT

27-1. Wheat (*Triticum*) in contrast to rice, is poorly adapted to climates that are continually moist and hot. It is more adapted to steppes and other semi-arid grasslands. "Optimum precipitation for wheat seems to lie somewhere around 32" (80 cm) per year, varying, of course, with the seasonal distribution of rainfall and prevailing temperatures. Where precipitation is considerably below optimum, wheat does not yield as well as millet or barley. . . . . . In general it may be stated that little wheat is grown in regions with less 9" (23 cm) of precipitation." [Royen, op. cit. p. 28]

28–I. The great popularity of wheat is based on several facts: (1) its carbohydrates and proteins are well balanced; (2) it is produced economically with nearly complete mechanization; (3) it can be grown in a wide variety of climates throughout the world, from near the equator to 60° N latitude, and 40° S latitude. The pattern of wheat farming in the subtropical Old World is largely complementary to that of rice farming. There are considerable areas in India and China where rice and wheat at different times in one year occupy the same fields, and where adjoining fields may contain the one or the other, corresponding to slight differences in level or porosity. In Asia the wheat yields in 1960 were 1830 lb. per acre in Japan, 700 in China, 650 in Pakistan, and 620 in the Indian Union.

29–I. The attraction of rice as compared with wheat is apparent by comparing the Asian yields of the one with the other. The yield of hulled rice grown by wet method is greater than that for wheat, so that in tracts marginal to both, rice takes first place, of course, with the aid of irrigation. In the irrigated areas of Sind rice has displaced wheat after the construction of Sukkur Barrage in 1932.

30–I. The world' many varieties of wheat are descended from a cereal, or kernel-producing grass which originally grew wild. The wheat which was first cultivated was einkorn or *Triticum monococuum*, the one-kernelled type. There is no unanimity of opinion as to exactly what species constitute the genus *Triticum*, but the following scheme adopted from N. J. Vavilov represents probably the present stage of our knowledge.

Species of Triticum

7 (14) Chromesomes	*14 (28) Chrom.*	*21 (42) Chrom.*
1. *T. aegilopoides* (wild einkorn)	3. *T. dicoccoides* (wild emmer)	—
2. T. monoco cuum) (einkorn)	4. *T. dicoccum* (emmer)	7. T. spelta (spelt)
	5. *T. turgidum* (poulard wheat)	8. *T. sphaeroco cuum* (Indian dwarf wheat)
	6. T. durum (macaroni wheat)	9. *T. compactum* (club wheat)
		10. *T. vulgare* (bread wheat)

31–I. Nos. 1 and 3 are wild forms of wheat occurring in parts of the Middle East. No. 2 *Eincorn* is one of the oldest cultivated grains. Its center of origin lies probably, according to Vavilov, in Asia Minor, and during the Neolithic it was grown from the Middle East to central Europe. Emmer (No. 4) was grown widely during the Neolithic, largely as a spring crop. It has survived mostly in isolated and poor areas from the mountains of Spain to the dry land of Iran and India. No. 9 (club wheat) is probably of Afghanistan, the north-western part of Indian peninsula. From there, it spread eastward into northern China and westward into Turkistan, Transcaucasia, and Anatolia. No. 10, bread wheat, probably originated

in southern Afghanistan, northwestern India, and adjacent portions of Iran, and spead from there over all regions of the world suitable for wheat production. Its numerous varieties produce the bulk of the world's wheat. [Royen, *op. cit*, p. 27]

32-I. "*T. aegilopoides* and *T. dicoccoides* are wild forms of wheat occurring in parts of the Near East.... Einkorn is one of the oldest cultivated grains. Its center of origin probably lies in Asia Minor, and during the Neolithic period it was grown in the Near East to central Europe. Emmer was grown widely during the Neolithic and the Bronze Age in the same general area, largely as a spring crop. It, too, has survived mostly in Abyssinia, and from the mountains of Spain to the dry land of Iran and India.......*Indian dwarf wheat* has a rather limited area of distribution in the northwestern part of the Indian peninsula. Considerable amount of club wheat were grown by late Neolithic man in Europe, but later it was supplanted by *T. vulgare*. [Royen, William van, *The Agricultural Resources of the World*, NY, 1954, p. 27].

33-I. Barley goes together with wheat so far as physical conditions for its cultivation are concerned. The people who eat and cultivate wheat are found to consume and grow barley also. According to Vavilov, there are three main regions in which cultivated barleys may have developed: (1) highlands of eastern Anatolia (Turkey), Armenia, and western Iran; (2) eastern Tibet and the mountain regions to the east; (3) Ethiopia–Eritrea. In the first region, two-row and four-row barleys predominate; in the second, six row barleys; in the last, both groups occur, as well as some intermediate wild forms often brought into a subspecies, *H. intermedium*. Barley is one of the oldest domesticated grains. Throughout Europe and the Middle East varieties of barley have been found in association with Neolithic remains. Most of these were six-row barleys, such as the barleys of the Neolithic lake-dwellers, and those which appear in Egyptian bas-reliefs and Sumerian and Babylonian inscriptions. Barley can grow under some harder conditions in comparison to wheat. However, it does not thrive in humid, and warm regions suited to rice [Royen, William van, *op. cit*. p. 71].

34-I. In the *Rigveda* the *yava* is mentioned, and as we have already noticed { 25-I } the *rice* is unknown to it [Macdonnel, A. A., & Keith, A. B., *Vedic Index of Names & Subjects, II*, Del., 1958, p. 345 : the work will be referred to as the *Vedic Index* in the pages to follow]. "Yava in the *Rigveda* appears to be a generic term for any sort of 'grain'. The latter sense is probably found in the *Atharvaveda*, and is regular later [*Vedic Index, II*, p. 187]. "*Godhūma*, 'wheat', is frequently referred to in the plural in the *Yajurveda saṃhita* and the *Brāhmaṇas*, and is expressly distinguished from 'rice' (*vrīhi*), or 'barley' (*yava*). The word occurs in the singular in the *S'atapatha Brāhmaṇa*" [*Vedic Index I*, p. 237]. "*Yava* or *yavana* rice is mentioned in the Tamil classics, but agein it is not certain if the reference is to wheat and not to barley. It is also significant that among eighteen 'koolams' or grains and pulses listed in the latter, neither wheat nor barley is included" [Aiyer, A. K. Y. N., *The Antiquity of Some Field & Forest Flora of India*, 1956, p. 74].

INDIA, AS IT UNITED THE TWO OLD WORLD AGRICULTURAL CRADLES.

35-I. Standing midway between the Southest Asia and the Middle East, India seems to have played a significant role in the fortunes of the two great communities responsible to inaugurating the Subsistence Revolution in the Old World, while coming nearer to each other in the course of their migrations.

36-1. The configuration of India has been organized into what is regarded as the Threefold Division of India by geologists [Pascoe, Sir Edwin, ed. *A Manual of the Geology of India and Burma*, 3 rd ed, Calcutta, 1950, p. 2]. Though the parental division of this threefold system is geomorphologically the rocky horst of the Indian peninsula, the great Himalayan arc ranks first geographically, because its southernmost ranges run along India's long land frontier from the Bay of Bengal in the east to the Arabian Sea in the west, embracing India's second division the alluvial Indo-Brahmaputra Plain[6]. Covering a vast area of some 3,00,000 square miles of a very fertile alluvial soil, the plain stretches for about 1,800 miles from the Brahmaputra gorge in Assam to the mouth of the Hab in Sind. It is one of the largest agricultural plains in the world and is well-waterd by the snow-fed perennial Himalayan rivers comprising three systems, viz., the Indus system, the Ganga system, and the Tsangpo-Brahmaputra system. The lofty Himalayan arc not only protects the plain of northern India together with its third division the Peninsular India from external invasions, but it serves the region in more than one respects. Firstly, the Himalayas obstruct the southward passage of the bitterly cold Polar winds, except in a part of Baluchistan and adjacent territories, having a low relief comparatevely. Secondly, it has diverted the eastward direction of the Atlantic storms bringing the winter rains that slightly influence Baluchistan, etc., towords the Inner Asia, and India has thus been saved from desiccation, a phenomenon ascribed for its origin and development to the northerly shift of these storms, as a result of the post-Würm deglaciation process[7] [East, Gordon, *The Geography behind History*, Lon., 1958, pp. 56-7]. Thirdly, the Himalayan wall compels the monsoons to discharge their stock over the Indo- Brahmaputra plain and over the uneven Indian peninsula. The monsoon rainfall follows over the plain a line of variation from about 400" in the Shillong plateau at Cherrāpunji in the east, to nearly 4" in upper Sind at Jacobabad in the west. The 40"-32" isohyetal band separating the precipitational conditions for cultivation without irrigation of rice, on one hand, and wheat, on the other, falls between Allahabad and Kanpur in the lower Gangetic Doab, and conditions favoring the barley-growing reaches as far east as the Patna district on the middle Ganga in Bihar. In the peninsula, however, where conditions do not deteriorate to go under 10", the datum line for setting in of the desert conditions or desiccation, the amount of the monsoon rainfall is mainly determined by the presence of the north-south running Sahyādrian (Western) Ghats, where it begins in the West Coast from a maximum

6 - The current term 'Indo-Gangetic' is inadequate and does not carry the meaning it stands for. In coining such geographical terms the names of the first and the last geographical units are generally empoyed. The author therefore prefers the term 'Indo-Brahmaputra' instead of the 'Indo-Gangetic'. As pointed out earlier, the indigenous geographical terms must now replace their corrupted western forms in interest of science, the term should rather be 'Sindhu-Brahmputra'. Since, the Greek name 'Indus' is fully established for the river 'Sindhu', we may, however, retain it, more particularly, because the term 'Indo'- that enters into a number of compound words, is more convenient than 'Sindhu'.

7 - The retreat of the Würm glaciation with which begins our present geological age the Neothermal or the Holocene, the second period of the Quarternary Era, was characterized by three minor advances in Scandinavia; (1) the Bühl, big. 18500 BC; the Gschmitz, 13500 BC, and (3) the Daun, 7500 BC. For contemporary conditions in India *cf.* Pandya, A. V., 'Post-Pleistocene Hydrographic Changes in Western India'. International Conference of Asian Archaeology, ND, 1961.

of about 160" at the foot of the great scarp. The rainfall drops on the leeside of the mout..ains to 20"–10" in the Raichuru (Raichur) Doab, from where it increases successively to 40"–50" isohyet when approaching the Cholamandalam or the East Coast.

37–I. Except by the way of the sea, the communications by land between India's main agricultural regions guarded effectively by the Himalayan arc, on one hand, and the rest of Asia, on the other hand, entailed much physical endurance and enterprise on the part of travellers during the Pre-Industrial times, because this formidable barrier is pierced for such purposes by only a few mountain passes, namely, the Khyber, the Bolan, the Gomal, and the Makran coast-route in the west; and the Diphu, the Chaukan passes and Lekhapani opening through which the great Asian highway enters Burma from India, in the east.

38–I. Geographical knowledge in early times was not probably so poorer as many of us think, as archaeology of even the Upper Palaeolithic and the Mesolithic cultures bears witness to far off trade relations. The change of food from roots, fruits and flesh to mainly cereals as a result of the Subsistence Revolution, created an increasing demand for salt. It had mainly to be brought from the sea-coast or playas, far away from many an areas of consumption. A number of such basic needs arose out of this revolution set peoples travelling far and wide and knowledge about many lands thus began to be accumulated among the incipient farming communities living both in the Southeast Asia and the Middle East. They may have thus also gathered some useful knowledge about India as well.

THE PATTERN OF IMMIGRATION AND DISTRIBUTION OF EARLY FARMING COMMUNITIES IN INDIA.

39–I. We have already noticed that very early farmers in both the cradles of the Subsistence Revolution were horticulturists { F. note 5 (I) } or semi-nomadic 'shifting-cultivators', semi-nomadic in the sense that they settled in a cultivated plot first, but their method of cultivation deprived in a couple of years the soil of its fertility and they shifted to another plot, where they built up a new house. Meanwhile, the fertility of the first plot returned. The horticulturist family would return to it, or as the population began to increase for there was no danger to life in contrast to that of the hunting stage, the plot would be given over to a son or son-in-law and the parental family would find out another plot. In this manner the horticulturists would go on moving slowly from region to region. In India a number of tribes in Assam and middle India live still in this stage, while majority of them have recently taken to sedentary plow cultivation under legislation or agricultural reforms.

40–I. In the Middle East the horticulturists preferred light and soft soils like loess in which sowing could easily be done, as we know in the light of archaeology from the Danubian basin [Narr, Karl J., 'Early Food-Producing Populations', *Man's Role in Changing the Face of Earth*, ed., Thomas, W. L., Chicago, 1956, pp. 138–43], Iran, Inner Asia [Phillips, E. D., 'The Nomad Peoples of the Steppes', *The Dawn of Civilization*, ed. Piggot, S., Lon, 1961, pp. 318–9], Mongolia, etc. [Coulborn, R, *op. cit*, pp. 94–8]. They were normally out in search of loess-steppes where on the dunes they constructed their flimsy habitations and cultivated round about, where even a little water in the loess would give satisfactory returns. In India the distribution of this Aeolian formation occurs in Baluchistan, Kashmir, Punjab, Sind, Rajasthan, western U. P., and northern Gujarat [Wadia, D. N., *Geology of India*, Lon, 1949, pp. 302–3 ;

Krishnan, M. S. *Geology of India & Burma*, 1956 pp. 532–3 : Foote, R. B., *Geology of Baroda State*, 2nd ed., 1944, pp. 70–74; also the author's own observations in western U. P., eastern Rajasthan, etc.] in the form of both surface and dunes. These Old World Western basic farmers are understood to have cultivated millets as well, together with barley and wheat, more particularly at an earlier stage of farming. They used largely implements of stone, like microliths, but not durable pottery as we shall discuss later.

41–I. In comparison to the early farmers of the Western farming cradle, the horticulturists of the Eastern cradle, as we can judge from ethnology, historical linguistics, etc., cultivated 'upland rice' and or small millets like *kodoṇ*, *kutkī*, kodra, *nāglī*, *bos*, *bāvta*, *korrā*, *varagu*, *samāi*, *horoko*, *barāgu*, etc., which could be grown on level patches in the hills in the conditions which are not encouraging for major cereals. Maize is cultivated by a number of tribes, and a question has recently arisen if this cereal did not reach America either from India or Africa [Coon, C., *The History of Man*, Lon., 1962, pp. 356–7]. The economy of the Eastern horticulturists, many of whom have survived in Assam [Chaturvedi, M. D., & Uppal, B. N., *A Study in Shifting Cultivation of Assam*, ND. 1960], and elsewhere in the form of various tribals with a little change, led them to occupy the Mid-Indian Orographic Complex, which commences in Assam in the form of the Shillong plateau and the adjacent Jaintia, Khasi and Garo hills; is submerged underground in Bengal (Rajmahal Gap), reappears in Bihar as the Hazaribāgh highland which continues in the form of the Pāts of Sarguja; the Mekal and the Mahadeva hills in M. P., ultimately terminating as the Satpuras within the sight of the Gulf of Cambay, extending a northern arm in the form of the Kaimur–Vindhya–Aravalli range with Narmada valley intervening; and throwing an offshoot toward south as the Sahyadris that continues to the end of the peninsula.

42–I. It will be seen from the above that two basic horticulturist communities of the Old World, had no obvious reason to come into conflict with each other, if they entered India simultaneously or successively, as their economic interests had no clash, because, they needed two diverse types of habitats.

43–I. In the next stage of the development of the farming technology the horticulturists of either of the two farming cradles, pursued somewhat different lines. In the next plane the horticulturists in the Eastern cradle were succeeded by 'intensive manual agriculturists' [Fn 5(2)], who were developing 'wet paddy' cultivation below the hills in the swampy plains without use of the plough, and produced more food per acre, in comparison to the horticulturists growing 'hill rice' or other hill grains already enlisted [38–I]. They were able to rear fish also together with paddy in their water-filled fields. They were therefore able to produce some surplus with which they would have been able to develop a civilization of their own; just as the ancient Mexicans and the Peruvians did on the basis of the same type of farming-economy [Fn. 5(2)]. Devastating inundations in the swampy alluvial lands are a great menace to the wet-paddy cultivators in the Far East. This factor, together with that of the increase in population, and some still indistinct factors, would have compelled the Eastern 'intensive manual agriculturists' to enter India also, and in such a case they would have obviously followed the Ganga towards the west. We have already noticed that isoheytal band separating the precipitational conditions for the cultivation of rice and wheat without irrigation, crosses the Ganga between Allahabad and Kanpur. Under the circumstances,

the Eastern intensive manual agriculturists, if they had entered the Gangetic basin, could hardly be expected to proceed further on in the plain, of course, they may appropriately be visualized as turning to the Himalayan foothills and proceeding along them, as far west as Gilgit and the Pamir, and confining themselves to the above isoheytal range that follows, indeed, this very route right to the Caspian.

44-I. Matters are clearer in the Western agricultural cradle, because, archaeology there helps us a great deal. There in the Middle East the horticulturists had already domesticated the cattle, and the circumstances later led them to invent the plow, employ animal labour in farming, use their excreta as manure, and devise means for small scale irrigation [Fn. S (3)]. This was an important advancement in the farming technology of a much greater economic value, than the plowless intensive manual wet-rice cultivation of the Easterners, who had no domestic animals for economic purposes. The Western farmers introduced first in the human history, permanent settlements which soon grew into nucleated villages founded on the streams or sheets of fresh water. The desiccation came in the way of their happiness. But it did not create a crisis involving a sudden mass-migration. As the streams grew drier and drier, people too, began to shift their villages stage by stage, first toward the adjacent regions having approximately the same physical conditions to which they were accustomed in respect of their living and economic conditions. They, therefore, as we know in the light of archaeology, shifted thus gradually from the Middle East to the Inner Asia, where the horse was the native animal.

45-I. The Western peasant villagers cultivating wheat and barley first appears in India in the northern Baluchistan, as the archaeological records tell us, in the Quetta region and the Zhob valley, where their oldest known culture the Qila Ghulmuhammad-I, in which the horse appears as a domestic animal together with cattle, has been carbon-dated to 3690 ± 85 and 3510 ± 515 BC [*Radio Carbon*, V, 1963, pp. 93–4, etc.] or approximately 3752 BC (85 ÷ 2 = 42·50 + 5690 = 3752·50 BC) and 3770 BC (515 ÷ 2 = 257·50 + 3510 = 3767·50 BC) or the 38th century BC. This was the time by which the foundations of Susa were not yet laid in Elam, and that Ubaid culture then obtained in Iraq. The Flood of the Sumerian Epic of Gilgamish [Thompson, R. C., Lon., 1928] was yet to come after a few centuries. "The 'Ubaid culture was evidently related to a contemporaneous Iranian Highland culture (Siyalk-III) which reached eastward across the plateau of Iran into Baluchistan" [Finegan, J., *Light from the Ancient Past*, Princeton, 1959, p. 21]. Eridu, however, where the sea and water-god Enki was worshipped during 'Ubaid period, had already been founded some five centuries earlier. Enki, according to the Sumerian tradition, brought the elements of civilization to Iraq from his original land Dilmun, which Prof. S. N. Kramer of Pennsylvania University, has recently identified with India ['Dilmun Quest for Paradise', *Antiquity*, XXXVII, 1963, pp. 111-5].

Matters seem to be perplexing.

46-I. The horse-riding Quetta- Zhob culture people were the Western peasant villagers preparing to enter the Indo-Brahmaputra plain; but, they were not likely to procceed beyond Allahabad at the confluence of the Ganga and Yamuna, with their cultivation of wheat. They thus would not have come into clash with Eastern rice agriculturists, who would have turned from the Allahabad-Kanpur area on the Ganga, towards the Himalayas (43-I) where in the *duns* lying between the Sub-Himalayas, and the Lesser Himalayas ideal conditions for cultivation of rice prevailed, just as they still do.

ARE THEORIES OF ETHNIC 'INVASIONS' CURRENT IN INDIAN HISTORIOGRAPHY UNTENABLE ?

47-I. However, it was not impossible for either of the basic farming community to cross the rice-wheat isoheytal band {35-1}. The crossing involved, on the first hand, the change of diet from rice to wheat, or *vice versa;* and, on the other, the adoption of a new farming technology. Food habits cannot change overnight. The readjustment takes normally a whole generation's time. Further, it requires the co-operation of the other party to receive training in new farming technix and the trainning must be spread over a number of seasons for successful adoption of a new type of agriculture. When two communities thus encounter each other, they do not normally fight. Co-operation between such diverse communities sets working a process of acculturation, which in the long run, brings about a synthesization of such communities into a single people.

48-I. We have already observed that there was no need on the part of the two semi-nomadic basic horticultural communities { 40-I } to come into a clash with each other and the same was the case also with two communities of sedentary basic agriculturists, as we have discussed above. Practically, all the works on the early Indian history explain away the immigrations into India as invasions on the earlier populations, and their driving away by the former into the hills and forests of the Deccan. These crude generalizations which are still fashionable with many a historians, anthropologists and archaeologists appear to have no substance. Anthropoecological considerations, just as we have discussed above, linguistic palaeontology, and traditional history do not lend support to this sort of interpreting crudely the mechanics of immigration, distribution, and migration of peoples in the Indian subcontinent.

DID THE SUN OF INDIAN HISTORY RISE IN THE EAST ?

49-I Prof. Carl O. Saur of the University of California, once President of the American Geographical Society, whose contributions are well-known [*Aboriginal Population of Northwestern Mexico*, 1935; *Colima of New Spain in the Sixteenth Century*, 1948; *Agricultural Origins & Dispersals*, 1962; 'The Agency of Man on the Earth'; *Man's Role in Changing the Face of the Earth*, Chicago, 1956, pp. 49-69, etc.], and who has pioneered the theory of a separate cradle for the cultivation of rice in Southeast Asia [third work of the list], which has now generally been accepted ['Archaeological Theories & Interpretations', Haury, E. W., *Current Anthropology*, ed., Thomas L. Williams, Jr., Chicago, 1956, p. 120 ; Howells, W., *Man in the Beginning*, Lon., 1956, pp. 194-5 : Linton, R., *The Tree of Culture*, N. Y. 1969, p. 26-7 ; Coon, C., *The History of Man*, Lon., 1962, pp. 126-7], ascribes a priority of date to the Subsistence Revolution in the Southeast Asia over the Middle East. If so, then the sun of the Indian history may have risen in Assam. Assam has drawn recently some attention in connection with the identification of a cradle for maize-cultivation that later spread to America, to which we have already referred to { 41-I }. We are going to examine all these issues at a later stage.

RICE-BARLEY RUBICON AND ITS SHIFT

50-I. We have discussed that the rice-cultivating basic agriculturists from the east who did not practice dairying, may not have proceeded west of the Lower Gangetic Doab, as the minimal rainfall conditions of about 40" did not obtain there for the cultivation of rice. At present wheat and barley are cultivated in the Doab above Allahabad as the following details taken from the volumes of the *Imperial Gazetter of India*, Oxford, 1908 [*IG*] would show :—

ACREAGE

District U. P.	*Rice*	*Barley*	*Wheat*	*Reference*
Allahabad	363	314	168	*IG.* V p. 231
Fatehpur	49	161	?	„ XII „ 79
Kanpur	—	254	230	„ IX „ 310
Etawah	—	135	179	„ XII „ 42
Mainpuri	—	110	220	„ XVII „ 36
Mathura	—	205	153	„ XVIII „ 18
Aligarh	—	281	386	„ V „ 213
Bulandshahr	—	227	424	„ IX „ 52
Meerut (Meraṭh)	—	—	634	„ XVIII „ 67

51–1. Rice is not thus cultivated from Kanpur north wards up to Meraṭh (Meerut) in the Gangetic Doab in U. P., however, the matter becomes complicated in view of the archaeological fact that at Hastināpur, situated on an old bed of the Ganga (Meerut dist.) which lies on 32" isoheytal line and where mainly wheat is eaten and cultivated today, rice has been found from the lower portion of the Painted Grey Ware[8] deposit [Chowdhury, K. A., & Ghosh, S. S., *Ancient India*, X & XI, 1954 & 1955, ND, pp. 129–35] or of the Hastinapur – II deposit [Lal, B. B., 'Excavations at Hastinapur & other Explorations in the Upper Ganga & Sutlej Basins, 1950–52', *AI*, X & XI, 1954 & 1955, pp. 5–151], belonging to the terminal phase of the Bronze age. This lower portion of the Painted Gray Ware which R. E. M. Wheeler had dated 8th–5th centuries BC [*Early India & Pakistan*, Lon., 1959, p. 25], is earlier than its iron-bearing upper portion carbon-dated to 1025 ± 100 BC { 100 ÷ 2 = 50 + 1025 = c. 1075 BC } at Atranji Kheṛa, in the Etah district [Subrhahmanyam, R., *All India Orient. Conf., Archaeology Sec., Pres. Addr.*, 1965, Gauhati, p. 9]. The river Yamunā (Jumna) over which the 30" rainfall line traverses in the plains, flows about 30 miles away to the west of Hastinapur. Beyond this river lies the Indo–Sarasvati basin of ancient times, where wheat and barley were cultivated, as we know in the light of archaeological evidence from Khokrā Kot, Haḍappa (Harappa), Moenjo Dhero (Mohenjo–daro), etc. [Chowdhury, K. A., etc. op. cit., p. 132].

52–1 In course of the excavations at Hastināpur, no other grains except rice have been found. "The remains of Hastinapur show," write Chowdhury and S. S. Ghosh, "that the people of the upper Gangetic valley were well acquainted with rice (*Oryza sp.*) and its

8 – Hastinapur was first visited, among archaeologists, by A. Cunningham [*Archaeological Survey of India*, VII, 1871 p. 61], but he has not made mention of mounds. A. V. Pandya, first explored its mounds in 1947, and is first to identify the Painted Grey Ware and its significance. The article which he prepared together with photographs, maps of mounds, drawings of pottery, etc., in 1948, remained for publication with Dr. V. S. Agrawala, who was then in the Archaeological Survey at Delhi. Dr Agrawala published it in the Nāgari Prachāriṇī Patrikā, LVI, 2, 1951, as its editor, under the title 'Prehistoric Mounds at Hastinapur'. An illustrated article under the same title by A. V. Pandya appeared in the *Dharmayuga*, II, 49, Dec. 9th., 1951.

uses about three thousand years ago { c. 12–13 the century B C in the new light, i. e., 3200 or 3300 yrs B P }. Here it may be pointed out that the use of rice-husk as a binder for mud-walls indicates the knowledge of a natural produce which comes to people when they have used it for a considerable period. It may not, therefore, be mere speculation to draw the conclusion that the people of the upper Gangetic valley had been using rice long before what the age of Hastinapur indicates" [op. cit, pp. 132–3]. We have noticed the cultivation of rice needs a minimum of mean rainfall of 40", whereas Hastināpur area receives today only 32". It shows *prima facie* that the rainfall has decreased in the upper Gangetic Doab by 10" since c. 12–13 th cent BC. The above writers state that rice is still grown about Hastināpur [op. cit, p. 135]. The author has visited this area a number of times. The staple of the present population of Mawānā tahsil of Meerut district, U. P., in which Hastināpur lies, as also of the whole district, is principally wheat { 50–I }. The abandoned bed of the Ganga to the west of which Hastinapur is situated on its right bank, is now a swamp called locally Khādir. In this swamp and at a few spots drawing water from the Upper Gangetic Canal, a little rice is grown; but this could hardly have been the case before the constraction of the canal in 1842, and also during protohistoric times when the *Khādir* was under the waters of the main channel of the Ganga. Hastinapur must have been in a flourishing state during the period to which the excavated rice belongs.

53–I, "If it is belived", writes B. B. Lal about the people of the Hastinapur II level, who must have been consuming and cultivating the excavated rice, " that all these coincidences are nothing more than mere chances, the questions wind themselves up. Otherwise, a conclusion that would appear to force itself on us is : that the sites of Hastināpur, Mathurā, Kurukshetra, Barnāwā, etc., are identifiable with those of the same name in the *Mahābhārata*. If that be so, the Painted Grey Ware would be associable with the early settlers on these sites, viz, the Pauravas, Pānchalas, etc., who formed a part of early Aryan stock in India.". [Lal, B. B., op. cit. p. 151]. The staple of the early Aryans or the Indo-Aryan branch of the Indo-Europeans was *yava* or barley as we have already noticed [34–I]. It follows from the evidence from Hastinapur and from the later Vedic *Samhitas*, as also pointed out by Chowdhury and Ghosh [op. cit. p. 131], that the later Vedic Aryans on reaching the upper Doab, i. e., the eastern part of the Kuru territorry, who are identified with some reservations by B. B. Lal with the authors of the Painted Grey Pottery Culture, were confronted with the situation of changing their diet to rice. Those who think like Choudhury and Ghosh [op. cit. p. 135] that no climatic changes have taken place in the Hastināpur area, might suggest that rice was cultivated there with irrigation in antiquity. We must remember in this connection that it was Bronze age, and our planning of this Industrial Age even has not yet succeeded anywhere to introduce irrigation on such a gigantic scale that may turn successfully a wheat producing area into a paddy-growing terrain. If the climate of the Gangetic Doab had not changed since the period of the early Painted Grey Pottery Culture, it follows then that the present conditions favouring mainly the cultivation of wheat prevailed there, the Indo-Aryans could have therefore easily cultivated or obtained locally the supply of their staples, the wheat and barley. Why then were they compelled *en messe* to change their diet from more advantageous wheat { 28–I } to rice ? In view of these facts we can hardly escape the conclusion that climatic conditions suited largely to paddy-growing and not wheat and barley obtained in the upper Doab at least during the later half of the second millenium BC. Under the curcumstances

the 40" rainfall line must have occupied in those times the 30" line that now passes over the Yamuna. It suggests primarily that the rainfall is reduced by 10" since the Bronze age in the Gangetic Doab.

54-I. The name 'Hastināpura' itself is either indirectly or directly related to the elephant[9], an animal of swamps with tall and sturdy grasses, like *Saccharum spontaneum*, found in the Hastināpur II layer [Chowdhury K. A., & Ghosh, S. S., *op. cit.* p. 121, 133]. Animal remains of the elephant have also been found in Hastināpur III [Bhola Nath, *AI* X & XI, 1954 & 1955, pp. 107, 110]. This presence of the elephant also supports the author's view that climatic conditions were wetter in the Doab in protohistoric times.

55-I. The Indo-Aryans, and the people of the Indus civilization whose ethnolinguistic identity has not yet been established, both consumed wheat and barley because they belonged to the Western agricultural region. When wheat does not flourish under the wet conditions of paddy cultivation, barley survives even when precipitation reaches the higher mark of 50", as the following list of the acreage under the cultivation of wheat, barley, and rice in the districts along the Ganga would show :—

ACREAGE

District	*Wheat*	*Barley*	*Rice*	*Ref. IG, 1908*
Allahabad, U. P (Rainfall 40")	168	314	363	V p. 231
Mirzapur, U. P.	113	109	161	XVII p. 17
Varanasi, U. P.	—	152	162	VII p. 183
Patna, Bihar	—	127	338	XX p. 59
Mongher, Bihar	—	little*	447	XVII p. 397
Bhagalpur, Bihar (Rainfall 50")	—	little*	495	VIII p. 31
Mālda, Bengal	—	—	611	XVII p. 78

*Figures not Given in *IG*.

9—"The fourth descendent of Vitatha or Vidathin," writes P. L. Bhargava, "is called Brihat in the Brahma and Agni Puranas and the Harivaṃśa and Hastin in other Puranas. Those Puranas, which call him Hastin, credit him with the foundation of Hastināpura. This statement is clearly wrong, and has been inserted by later editors due to similarities of the names of Hastin and Hastināpura. The reasons are obvious enough. In the first place, if this had been a fact, those Purāṇas, which call the king by his other name, would also have mentioned it. Secondly, Brihat being another name of Hastin, the synonym of Hastināpura should have been Brihatpura. But what we actually find is that its synonyms are Gajasāhavaya, Nāgasāhavaya, etc., which all indicate that the city was not named after any king but simply meant the city of elephants." [*India in the Vedic Age*, Lucknow, 1956, p. 45].

We have already noticed how the precipitation was higher by about 10" in the Gangetic Doab formerly, the 50" mark under which barley normally survives as the above list shows (Bhagalpur), would very probably have therefore been in Allahabad-Varanasi tract, where mean rainfall is now 40", during the second millenium BC. Under the circumstances, the Western farmers consuming and cultivating barley along with wheat, would have penetrated with a mixed diet comprising rice and barley, as far east as the Allahabad-Varanasi tract in the Gangetic basin. So in the upper Gangetic Doab when they had to change their diet, it meant simply that wheat was replaced by rice and they then pulled on with a mixed diet of barley and rice. In the marginal regions like Gujarat the staple diet of the people is of a mixed nature. In this mixed diet, rice remains constant and the other component, which may be wheat or millets, changes from area to area according to its availability.

56-1. Over and above the factor of rainfall, the nature of soil and its surface also play a determining role. The cultivation of wheat needs an even surface. Further, the change of climate cannot merely be a local phenomenon. It must occupy fairly a large area, but not necessarily the entire region.

HOUSING AND SETTLEMENT PATTERNS UNDER TWO BASIC CEREAL ECONOMIES

57-1. That the Western peasant villagers penetrated the Gangetic basin as far as the confluence of the Ganga and Yamuna or the Sangam at Allahabad, is further attested by the characteristic 'box-type' ['Mud walls and flat roof' of South West Asia: as illustrated in, Spate, O. H. K., *India and Pakistan*, Lon, 1954, pp. 178-9, on the basis of Ahmad, E., 'Rural Settlement Types in U. P.', *Annals Asson of Amer. Geographers* XLII, 1962, pp. 223-46] houses developed in a semi-arid environment, first probably in the Middle East. They occur in India in Baluchistan and the Indus basin north of the Peninsular India and then their distribution enters the Doab and terminates in the vicinity of Allahabad. Further east along the Ganga this house-type continues with the only difference that flat roof takes the gabled shape covered on either side with tiles of baked day (*Kavelu*, Hindi), as far as Patna district and is then succeeded by the 'gabled cottage' ['Bamboo and thatch on mud plinth'; Spate, O. H. K., op. cit p. 179] type characteristic of the wet Southeast Asia. The plan of the two house types reflect the structure of the family as patterned by the two cereal economies. The plan of the 'box-type' suggests the 'joint family' structure, whereas the 'gabled cottage' the 'elementary family' structure. It is so because the Western agriculture involves cattle-rearing and dairying also. The Eastern agriculture was essentially without animal labour and dairying, and its hoeing and other operations in small plots do not require many persons. Poultry and pig are two associates of the Eastern agriculture in which dairying is compensated by fish culture.

The grouping of houses into the settlement pattern called the 'village' had already achieved an advanced stage of development before it entered India from the two farming cradles. It would be worthwhile here to review this development before we procced further with this discussion of anthropo-ecological conditions that obtained in the subcontinent before the immigration of early agricultural communities. It should not be forgotten in this connection that cultivators had already enterel India before this. But they were horticulturists who had no settled habitations.

58-I. What are regarded as 'the central excitatory mechanisms' (CEMS), and 'the innate releasing mechanisms' (IRMs) of human behavior remain still to be fully understood, in spite of the researches of Adolf Bastian [*Das Beständige in den Menschenrassen und die Spielweite ihrer Veränderlichkeit*, Ber. 1868], Sigmund Freud [*Totem and Tabu*, Ber. 1912-3; Eng. trans., Brill, A. A., NY, 1931], C. J. Jung [*Psychologische Typen*, Zur. 1921.], Ludwig Bolk [*The Problem of Humen Incarnation*, Jena, 1926], Adolf Portmann [*Das Problem der Urbilder in biologischer Sicht*, Zur. 1950], Géza Róheim [*Psychoanalysis & Anthropology*, NY, 1950], N. Tinbergen [*The Study of Instinct*, Lon. 1951], and others. Tinbergen, speaking for the animal world, has named sleep and food-seeking; so also, in many species, flight from danger, fighting and rivalry, mating, and parental behavior. The list greatly varies, however, from species to species; and how much of it can be carried over into the human sphere is, as J. Campbell points out [*The Masks of God*, Lon. 1960, p. 48], is not yet known. Tentatively, he writes, it might reasonably be supposed that food-seeking, sleep, self-protection, courtship and mating, and parenthood are peculiar to man. We may add to the list the environmental requirements of the oxygen, space and shelter, and the material requirement of water. The list may be as under :-

1. Environmenal requirements-

i. oxygen
ii. space (shelter, etc.)
iii. water

Man gets these without or with little effort

2. Material and mating requirements-

i. food (gathering or production)
ii. self-protection (clothing and weapons)
iii. spouse

Man obtains Nos. i and ii with much effort through science and technology

3. Instinctive urges-

In the light of the studies on psychology and the collective human behavior as it has reflected on history, man appears to have inherently the following instinctive urges-

i. aesthetics
ii. sports and festivities
iii. animal-agressiveness
iv. religiousness
v. domination
vi. feeling of uniqueness
vii. parasitic hedonism
viii. altruism
ix. quest for the unknown

Man cannot do without fighting, because he still has in him some relics of animal mind. Side by side with these animal faculties, man has been developing also some human virtues, namely, the aesthetics, sports and festivities, feeling of uniqueness, altruism or efforts for well-being and happiness of others first, and last but not least, his faculty of quest for the unknown { 54-I, 3, i ii vi, viii, & ix }. Greater humanity lies in further pursuance of these urges.

59-I. The mechanism of human process appears to have been operating since the beginning of the Agricultural stage on two mutually mal-adjusted planes of human activity. They are (1) the Subsistence plane related to the activities pertaining to the Environmental { 58-I, 1 } and Material and Mating requirements satisfying vital biological { 58-I, 2 } urges; and (2) the Extra-Subsistence plane on which human activity normally seeks to channelize itself through such efforts as may satisfy man's instinctive urges { 58-I, 3 } also. Man, the food-producer Adam as we have once called him metaphorically { 3-I }, has, on one hand, been winning his subsistence comprising the biological urges for food, clothing, and shelter from nature; and, on the other, he has been struggling against the encroachment by a section of his own society, which is, impelled by such instinctive relics of animal stage in man as the extra-subsistence urges, namely, establishing domination on others, hedonism enjoyed by parasiting on others' resources, and seeking solutions by means of animal – agressiveness rather than by pursuation and other rational approaches. We observe that no other animal than man has no free access to the natural resources and facilities for satisfying his vital biological needs. It is therefore also man's birth right like other beings to have a free access to the life-sustaining resources that nature offers him. He pays their price through his labour and skill that he employs in obtaining and processing them. Mankind is living now in the Agricultural stage of subsistence and therefore every economic family unit has a birth right to own a piece of cultivable land that may yield sufficient food-grains, fat, and fibre for an assured subsistence. It could be transferrable but not transactable giving no access to the state for authority or ownership. Social organizations above the family unit have no natural right to own or tax the means of subsistence. A family may like to increase or decrease the number of its members or may prefer to starve instead of producing adequate food for itself; it may cultivate individually or many families may organize themselves into co-operatives, is the responsibility of the family itself and not the concern of the state in the natural setting of things as deducible from biology and history. The society primarily stands for the individual.

Such is the fundamental position of the human family unit vis-a-vis the state in theory. Actually it has not happened so because history proceeds in its own manner. Such is the course of nature.

RELIGION

60-I. Religion, according to what is known as Tylor's minimum definition of it, is a belief in spiritual { supernatural } beings [Tylor, Sir E. B., *Primitive Culture*, I, 1871, pp. 424], that is 'animism,' which owes its origin to the phenomenon of dreams, life, and death, recognizing an invisible soul essence separate from the physical body. "Religion", state R. L. Beals, and H. Hoijer, "includes all those patterns of behaving whereby men strive to reduce

the uncertainties of daily living and to compensate the crises which result from the unexpected and unpredictable. Through religion men attempt to control, by magic, prayer, sacrifice, and numerous other ritual devices [*An Introduction to Anthropology*, NY, 1959, p. 529]. In so doing, man presupposes a world of supernatural beings like spirits, ghosts, demons, deities, and gods. To communicate with these beings, and to secure their aid or assuage their anger, there are men with special powers and abilities, such as shamans or magicians, and priests. Magic is another manifestation of supernaturalism. Magic is pseudo-science in some of its aspects, according to Frazer [Frazer, Sir James G., *The Golden Bough*, 1890, one vol. ed., NY, 1941, ch. 4], and B. Malinowski states that magic begins where {science} and technology ends [*Coral Gardens & Magic*, NY, 1938]. In the religious state of mind, man acknowledges the superiority of supernatural powers upon whose action he thinks his well-being depends. His attitudes are preponderantly those of submission and reverence. The object behavier put forth is manifestly that of beseechment, petition, and appeasement in prayer, offerings, and sacrifice. *Tabu* consists of a series of negative rules, through which it is sought not to offend the supernatural.

61–I. As regards the evolution of religion, the earlier anthropologists tried mainly to trace it from cruder beginning with animism into developed forms. It was challenged by Andrew Lang who propounded that gods do not always improve ethically with advancing cultures [*The Making of Religion*, 1898]. R. R. Marret found out that the animistic stage of religion was preceded by what he termed the animatistic characterized by belief in *mana*, a Melanesian term that means a supernatural force, which though not vitalistic, is held to exist as a supernatural attribute of persons or things [' Pre-Animistic Religion ', *Folk-Lore*, June, 1900]. The *mana* finds its counterpart in India among the Austric-speaking Hos and Mundas of the Chutia Nagpur tableland in the eastern India, as *bonga* [Majumdar, D. N., & Madan, T. N., *An introduction to Social Anthropology*, Bom, 1957, pp. 166–7]. F. B. Jevons improved the sequence further by advancing the idea of totemism,[10] and sacrificial communion as the first stage in religion, preceded by a non-animistic stage of universal personification [*Introduction to History of Religion*, 1896, pp. 271]. Andrew Lang has shown further that the idea of a High-god, creator and guardian of all, is found among the simplest and rudest peoples and that High-god belonged to a pre-animistic stage [*The Making of Religion*, 1898]. Sir James Frazer has based his theory of the development of religion on the evolution of intellect [*The Golden Bough*].

62–I. Among the recent contributions on the historical aspect of religion that of John Murphy of the University of Manchester is of much significance. In his *Lamps of Anthropology* in 1963, Murphy expressed his views about the march of man from savagery to civilization. The primitive horizon is, he stated, that of the simplest groups of hunting and gathering

10—A totem is an object toward which members of a kinship unit have a special mystical relationship, and with which the unit's name is associated. The object may be animal, plant, or mineral. In totemism, the totem animals cannot be killed or eaten except under very special circumstances. The totem is treated both in life and death like a fellow tribesman. Totems are sometimes taken out to be rubbed against the body, to transmit power [Winick C., *Dictionary of Anthropology*, Lon, 1966, pp. 542–3].

peoples, past and present, with their semi-instinctive perceptual, and concretistic way of thinking. The larger and more closely organized tribal societies show a more developed imagination, and are deeply involved in custom, which is their law and ethics, and held by the solidarity of the group. Out of this in the great river valleys of antiquity developed the beginning of the civilized mind, when people began to realize their power over what they have accomplished, to organize their resources, and in specialization of work to realize individuality. The necessity to share water in irrigation, not only between neighbours but between cities, sees the beginning of law. The pauses in steady work which occur in an 'agricultural civilization' give opportunities for thought about directions and values which the older hand-to-mouth life denied. Finally, the growth of great civilizations, trade, and commerce, the increase in power of the momads of the steppes, getting in each other's way, and consequent wars and hybridization of cultures bring about the great period of the last millemium BC, when the Confucians in China, the Buddhists in India, the Prophets in Israel, and the scientists and philosophers in Greece lay the foundations of freedom of thought, and of ethical and religious values. The questions arising from conflicts of customs and ways of life are no longer 'What is done?' but 'What is right?' [Penniman, T. K., ed., *A Hundred Years of Anthropology*, Lon, 1952, pp. 369–70].

STAGES OF RELIGIOUS DEVELOPMENT

63–I. John Murphy, to whom the author prefers to follow in regard to the religious development, has recognized five stages of the evolution of religion, which be calls horizons. They are as follows [*The Origins & History of Religions*, Manchester Univ., 1952, pp. 9–14] :–

1 – **The pre-animistic Primitive Horizon** — The earliest recognizable type of religion, which is found within this circle or range of culture, is a rudimentary religious attitude of wonder, awe, fear or hope, or a complex of these towards objects possessing *mana*. The tendency in man at all stages of his history to interpret things in terms of his own being, or to anthropomorphize, leads to the almost invariable attribution to the mysterious object of the quality of life.

2 – **The Animistic Horizon** — Animism means, as we have seen, belief in spirit beings. This horizon embraces the innumerable savages in many parts of the world who have tribal form of culture. These tribesmen are not so almost exclusively wanderers as the food-gatherers and primitive hunters, but are settled in a particular area, have their homes in more or less fixed villages, and are attached to soil as cultivators. It is usually horticulture or milpa. Here the tribal horizon borders upon and shares to some extent the character of the next Agricultural Horizon. *The religion of the rice-cultivating Eastern basic cultivators belonged to this Animistic Horizon*, in which, for the reason that the social organization was matrilinial, as we shall observe later, female deities predominated in the pantheon.

3 – **The Agricultural Horizon** — is created by the large-scale plough cultivation, often with irrigation, and cattle-breeding, i. e., river valley agriculture and dairying. Great food surpluses bring about a general improvement in the conditions of man's life, resulting in a great increase in population, so that small clans became tribes and tribes became hordes, which swept out of their narrow

areas and leaving behind them their cramping taboos, went conquering into new lands and formed nations, kingdoms and empires, out of which sprang the ancient Bronze age urban cultures or 'civilization' in Iraq, Misr (Egypt), Indus basin in India, China, and subsequently during early Iron age in Greece and Rome. The religion of the Agricultural Horizon takes the form of deepening of personalizing tendency, so that the spirits of the tribal animism are often raised to a definiteness and a content of power which makes them deities, with a certain area in which they are authoritative (like city-gods of Shumer or southern Iraq of Bronze age). There are two salient worships at this stage which tower above the welter of spirits of the tribal animism proper. One of them is the worship of a mother-goddess or the Earth-mother, who personifies the newly impressive quality of fertility in the soil and the waters, in the crops and in the cattle and in human kind. The other worship is of the group of powers in the heavens which the nomadic herdsmen and shepherds cannot help observing and in the quite and leisure of their occupations reflecting upon, while the farmers must also study and wait upon them for the sake of crops; and thus the sky or the firmament of heaven, the sun, the moon, certain stars and constellations, the storm, the fertilizing waters from above, are great spirit-powers tending always to be anthropomorphized into deities. The religion of the Western early wheat-barley cultivators belonged to this Agricultural Horizon.

4 – **The Civilized Horizon** — The religion of peoples at this horizon reflects the political and social system it embraces, and is commonly polytheistic, with a society of gods like the senate of a republic or more often the court of a supreme and more or less autocratic monarch. The gods are chiefly the nature-powers of the preceding Agricultural Horizon, more deeply personalized and given dramatic reality as a consequence of the increase of reflective thought among the leisured classes of the ancient civilized nations, and as a result of the work of the special priestly class.

5 – **The Prophetic Horizon** — The essential features of this religious horizon spring from the increased capacity of conceptual thought in the ancient civilizations, from the direction of that capacity towards the forming of moral and religious conceptions, and from the new conditions which made possible the emergence of great individuals, such as prophets, philosophers, ethical and religious teachers from about 2000 BC onwards.

64-I. We have reviewed briefly the dynamics of the human process { 58-I }, the fundamental subsistence rights of man in theory as deduced from biology and history { 59-I }, and reaction of religious mind to living conditions at various economic levels { 63-I }. The development of plough cultivation in the Western farming cradle and of the wet-paddy tillage in the Eastern cradle began to release food-surpluses sufficient enough to maintain an appreciable number of full-time non-food producing workers in the society. As a result of it, the society above the level of the family unit began to bifurcate into a main community of food-producers and a dependent community in which such full-time non-food producing classes as of priests, soldiers, rulers and administrators, craftsmen, carriers, traders, and others, began to emerge gradually and this process was transitional

to that of the Urban Revolution that came later during the Bronze age. This early social stratification (not classification) began to influence also the settlement pattern that was emerging there during early (Neolithic) times of the Agricultural stage.

65-I. In the human society the division of labour and skill in a rudimentary form dates back to the rise of shamanism during the Upper Palaeolithic stage [5-I] of hunting and fishing, as we know from the cave-art. " The religious practitioner, the *shaman*, " writes Coon, " was the first specialist. His profession is the oldest. The *shaman* was an all-purpose expert in human relations. He cured the sick as much as it is possible for human beings to be cured by suggestion, massage, sucking, and phlebotamy. He raised the morale of his own group by his invisible warfare with the enemy. In case of calamity he provided a convenient scapegoat, and above all he furnished entertainment.... From the *shaman* is descended a long line of specialists, including priests, diagnosticians, surgeons, teachers, and scholars [as well as astrologers]. " [*The History of Man*, Lon., 1962, pp. 111-2].

66-I. " The priestly class in the ancient civilizations, " states John Murphy, " is a natural development from the [*shamans*] medicine- men or wizards of the savage tribe. The difference was made by the immense increase in complexity of man's social and religious life. The great gods of the natural world demanded a different approach from, for example, the use of coersive magic which by the law of similarity in savage science brought a desired event to pass, or by the utterance of powerful spells forced an unseen power or spirit to obey.... The priestly order, however, is subject to one tendency which is powerful. It is tendency to externalize religion, to make it a matter of rites performed, words spoken, customary things done, which were supposed to be well-pleasing to the deities. One of the two main sources of this tendency was a phase of man's inveterate anthropomorphism in thought, namely, the interpretation of the nature and will of gods by the material splendour and general elaboration of the life of the king and the ruling orders, and hence the tendency to copy that elaborateness in the magnificence of temples and the complexity of rites and observances, in which reflective thought and an inward faith became different and for the most part impossible. The other source of the same externalism was the nearness of the tribal way of thought and life and the tendency to relapse into it. This appears in the approximation of priestly ritual and the priestly attitude of mind to tribal magic and to primitive way of thought which is behind it. " [*The Origins & History of Religions*, Manchester Univ. 1952, pp. 134-5].

67-I. "The Neolithic farmer" writes Jacquetta Hawkes, " was tied to the land. He had invested his seed corn and must wait for the dividend....Not infrequently among modern peoples all uncultivated land is expressly recognized as belonging to the clan; if it is cleared and worked, it becomes the property of the family responsibility but reverts to the clan should the family die out.....Family ownership was a very geniune form of communal possession, for quite numerous parents, brothers, sisters, cousins might all have equal claim to the land and its produce....Individual possession of land is rare among primitives, but there are many instances of particular things such as fruit trees being owned by individuals. It has been supposed that this kind of personal ownership has usually arisen when one people hes mingled with another, particularly when a partilineal people has permeated a native matrilineal society. The trend away from clan ownership is of great significance for it would almost certainly coincide with a weakening of matrilineal inheritance....Traces of

matrilineal descent and even of matriarchy survive in the forms of Egyptian, and Cretan civilizations, but in general the growth of urban life everywhere brought it to an end.... Totemism is found among primitive farmers today, and it is possible to interpret the names and the related animal cults of Dynastic Egypt [c. 3200–330 BC] as survivals of a prehistoric totemism....With greater skills, more leisure and a settled home, a mild acquisitiveness could now take its place among human desires. The primary Neolithic way of life seems generally to have been a peaceful one not given to warlike adventure. The general absence of weapons of war among the grave furniture of Neolithic burials provides even more convincing proof of the absence of martial ideas in the hearts of the new peasantry....There is practically no evidence for full–time specialists in ordinary village life. Every family seems to have undertaken all forms of labour and craftwork for itself. Modern analogies indicate that so long as the ground was prepared by hoeing and not by ploughing, woman remained the cultivator. She probably also invented potting, spinning, and weaving and kept these crafts in her hands....In the simplest societies of the primary Neolithic diffusion, what was said of Palaeolithic shamans and medicine men would probably still be applicable....This survey of the social aspects of the Neolithic way of life as it spread from its ancient centres between eight to four thousand years ago is largely based on supposition and inference, yet results in a consistent overall picture. The common basis was formed by varieties of villages or group communism with appropriate forms of customary government by village councils or groups of elders. In southwest Asia and the Nile valley before the end of the Neolithic phase, village communities began to develop towards the great theocracies that were to emerge in Dynastic times" [*History of Mankind*, I, UNESCO.

68–I. The rice–cultivating early Eastern farmers (Neolithic)[11] were matriarchal and had predominantly the female deities, whereas the wheat–barley growing early Western farmers who were patriarchal had mainly male dieties in their traditional religion. The *shaman* was already there in the two societies since much before the Subsistance Revolution. All the happiness that the agricultural life bestowed upon the two societies was ascribed to the favour of new deities of the Agricultural Horizon of religion [63–I], who were connected with the operations of farming, elements, and nature–powers, for instance, earth, sky, sun, stars, storm, atmosphere, cloud, rain, water, river, etc. There was more emphasis on deities connected with water and rain in the Western cradle in the Middle East on account of growing importance of water in a gradually desiccating region. As the fulfilment of the subsistence requirements was assured with the coming of agriculture, certain instinctive urges began to assert themselves, and the urges of religiousness combined with those of aesthetics, sports, and festivities began to seek their channellization through human behaviour. Surplus was considered to be the gift of gods and was therefore thought worthy of dedicating to them and the *shaman* who was already present in the society became engaged devising various ways to propitiate

11 – The invention of agriculture is understood to have coincided with the Neolithic period and therefore writers generally refer to the incipient or early cultivators as Neolithic farmers. The author, as he would discus later, maintains that this invention took place earlier. The Neolithic was more of a technological stage than an economic one and it is not necessary that the two should coincide. He therefore avoids the term Neolithic as marking the incipient and early stage of cultivation.

the new deities of the Agricultural Horizon and in so doing he became the priest. All that was thought best was deemed fit to be offered to gods and this encouraged also fine arts and craftsmanship. All these developments influenced the settlement-plan. Shrines began to be constructed for village gods. They had adequate provisions for religious display of fine arts, ritualistic ceremonies, festivals, and quarters for priests and craftsmen. The priest had nearly entire surplus-yields and services of people at his disposal. He siezed the opportunity and began to work his way under the influence of such instinctive urges as to dominate others, feeling of uniqueness and resort to parasitic hedonism. The priest thus began to dominate the affairs of the settlement and the village councils grew weaker and weaker. The community and its affairs, too, began to become more and more temple — oriental. These developments which seem to have occurred during the early Neolithic (C. 7000 – 6000 BC.) of the Middle East, mark the beginning of a period of social deterioration under which at a later stage, the non-food-producing minority comprising priests, rulers, soldiers, and traders turned to the parasitic exploitation of the resources and earnings of the food-producing majority and carried it to the extent that the latter were relegated to the degraded status just above the slaves and serfs in the social hierarchy.[12] They were considered hardly better than bipedal beasts who were created to produce food and wealth for the minority in the farming season, and to work off-season under forced labour for the constuction of the great pyramids, ziggurats, pagodas and mausolea for a bare hand-to-mouth existence.

69–I. Returning from a glimpse of the consequences which were to take place after some centuries to our village of the early Neolithic (c. 7000-6000 BC) of the Middle East, we find the early peasant community in a happy state of affairs as we have already reviewed in the words of Jacquetta Hawkes. But this happiness remained confined only to the Eastern Old World farming cradle, where all those who wanted to take to the new mode of economic life, had an apportunity to get land for farming. In the Western cradle, on the other hand, the advancing desiccation compeled more and more farmers to return to nomadic pastoralism, and the issue may have arisen, who should remain on the land and who should abandon it and go back to the wilderness?

CAIN AND ABEL

70–I. The crisis finds its echoes in the Holy Bible.

"And Adam knew Eve his wife; and she conceived, and bare Cain, and said, I have gotten a man from the Lord. And she again bare his brother Abel. And Abel was a keeper of sheep, but Cain was a tiller of the ground. And in process of time it came to pass, that Cain brought of the fruit of the ground an offering unto the Lord. And Abel he also brought of the firstlings of his flock and of the fat thereof. And the Lord had respect unto Abel and to his offering but, unto Cain and to his offering he had

12 – "In Egypt only two classes can be recognized under the early dynasties, the government and the governed...the officials who administered Pharaoh's orders and the rest, mere cyphers, who obyed them...In the (Babylonian) Code of Hammurabi (Khammurabi) the distinction is drawn between 'the gentleman', 'the poor man' (mushkenu, 'semi-free', they were cultivators) and the slave" [Woolley, Sir L., *History of Mankind*, II, UNESCO, 1963, pp. 468-78]

not respect. And Cain was very wroth, and his countenance fell. And the Lord said unto Cain, Why art though wroth? And why is thy countenance fallen? If though doest well, shalt thou be not accepted? And thou doest not well, sin lieth at the door. And unto thee shall be his desire, and thou shalt rule over him. And Cain talked with Abel his brother and it came to pass, when they were in the field, that Cain rose up against Abel his brother, and slew him. And the Lord said unto Cain, Where is Abel thy brother? And he said, I know not: Am I my brother's keeper? And he said, what hast thou done? The voice of thy brother's blood crieth unto me from the ground. And now art thou cursed from the earth, which hath opened her mouth to receive thy brother's blood from thy hand, when thou tillest the ground, it shall not henceforth yield unto thee her strength." [*The Bible, the Old Testment*, Genesis, 4, 1–13].

71–1 And the children of Cain, the cultivator, sought a solution by grouping their box-type houses as closer as possible, primarily for co-operative defence against the offsprings of Abel and it is what we call the 'nucleated settlement' pattern. The conflict has, indeed, persisted through the rest of the main Old World history. The agrarian Shumerians (Sumerians), or the Black-Headed People as they called themselves in their records, the pioneers of the Urban Revolution in the annals of man and the founders of the Western civilization, were wiped out by the pastoralists, the Semitic Akkadians (Babylonians) and the Ashurs (Assyrians) by 2000 BC. When these Semites were rehabilated in the place of Cain, they also lost the favour of god, and during the middle of the second millenum BC were effaced from the scene of history by the horse-breeding and chariot-riding pastoral Indo-Europeans or the Āryas, who were the Khattians (Hittites) of Asia Minor, the Mitannu-ites (Mitannis) of the northern Iraq and Armenia, The Kashshians (Kassites) of Babylonia, and the Madaya (Medes, Medians) and the Parashu (Parsians) people of Iran. The Aryas, after becoming the agriculturists and rulers, could not escape the curse of God, and they too, in their turn, were invaded by the hordes of the Goths, the Sakas (Scythians), the Huns, the Mongols, and others. We do not know whether the conflict between the descendents of Cain, 'the haves', and the children of Abel, 'the have nots', is yet over or not. Perhaps science may intervene.

72–1. India was still a far cry for the wheat-barley cultivating 'aceramic Neolithic' children of Cain belonging to the end of the Jericho 'A' horizon (c. 7000 BC.) of the Middle Eastern archaeology. The nucleated village had yet to develop into the fortified village, before it was to reach Baluchistan about three millenia later (45–1) by the way of northern Iran.[13] Now let us follow the development of the nucleated village to its further stage.

FATE OF THE FOOD-PRODUCER

73–1. The development of the desert in the Middle East under natural forces, began to throw, on one hand, more and more peasants into desert for herding, and this ever-increasing herding leading to overgrazing [Wissmann, H. von, 'On the Role of Nature & Man in Changing the Face of the Dry Belt of Asia', *Man's Role in Changing the Face of the Earth*,

13–On entering the Indo-Sarasvati basin they appear to have bifurcated into two urban developments, one moving towards the Ganga in the form of the Indus civilization (c. 2300-1700 BC) and the other spreading towards the middle and the south as the Peninsular Protohistoric Civilization.

Chicago, 1956, pp. 278-304] was accelerating, on the other hand, the pace of aridification. The economic imbalance thus created, not by man but by nature, prompted the landless and homeless pastoralists to take recourse to plundering the cultivators after the harvest. The new situation warranted further defensive measures on the part of villagers and the solution was arrived at by fortifying the settlement and to maintain a number of full-time armed-defenders. The strength of the soldiers had to be increased more and more with the increasing menace of bigger and bigger attacks on them by the pastoralists who had nothing to loose even if defeated. In this process of the enlargement of the soldiers' force, a psychological hour came and soldiers' class which began to feel the pressure of the instinctive urges of dominating others and parasitic hedonism which they had witnessed at temples, began to think themselves stronger enough to subordinate the peasantry. The two new elements, the priest and the soldier joined hands. The priest, whose personality had developed into *mana* in the sight of the people, became in course of time the king by virtue of his divine attributes. The satelliting soldiers formed a privileged-class at the cost of the food and wealth-earning unarmed cultivators' majority. "Once the old system of state-socialism", observes H. W. F. Saggs, "had begun to break down, a situation arrived where it was the individual peasant, holding land as private property, rather than as a fief from the temple, who took the first stock of catastrophes such as flood, drought, blight or sickness. Whereas in the original system the temple, as lord and owner of everything, both land and people, took steps by the issue of rations from the temple granaries to tide the community over such difficulties, the independent land-owning peasant now had to borrow from the temple, and borrow at interest. Over the years this would result in the greater part of the peasantry becoming the victims to a crippling load of debt" [*The Greatness that was Babylon*, Lon., 1962, p. 198]. The top class and the main economic body of the society was thus relegated in social hierarchy to the last (slaves) but one division. The parasiting people had seldom an idea how hard and toilsome it was for the peasantry to produce the huge food-surpluses and wealth which the former exacted from them without return and were tempted under various intutions to spend them prodigally for they had nothing to loose. Temples with their rich paraphernalia for propitiating the gods at the cost of other people, an army and an array of administrators acting at the whims of the 'divine' priest-cum-ruler enjoying unchallenged authority, all grew into heavier and heavier a burden on the peasantry from within, on one hand; and were subjected to plundering and cattle-lifting by the nomads from without who were already harassing them, on the other hand, as we have noticed earlier. The economic imbalance thus created artificially has persisted through history from the Neolithic times onwards and all economic philosophies evolved and implemented meanwhile as remedies have failed so far.

NEOLITHIC SOCIO-ECONOMIC DEVELOPMENTS REFLECT ON VILLAGE PLAN

74-I. All these socio-economic developments reacted on the evolving pattern of the nucleated village settlement in the Western agricultural cradle. A shrine with a sacred bath, a castle separate from the main settlement, and a defence wall or fortification, were added to the village architecture. Jericho in Israel is the oldest archaeological site where this settlement pattern has been found in the levels that range from the late Aceramic (pre-pottery) Neolithic to the Neolithic proper (C. 6500 - 5000 B C) and the conditions in the subsequent Hassuna-Samarra period (C 5000 - 4000 B C) of the Iraqi protohistory became ripe enough for the

Neolithic peasantry to move into the basins of such perennial rivers as the Bahr en-Nil ('Nile' in English, etc., 'Nilus' in Latin, 'Neilos' in Greek, and the Hāpi in the ancient Misri or Egyptian) in Misr, and in Iraq of the Il Frāt (Balylonian *Purattu*, and the Shumerian Buranunu) and the Nahr id-Dijli (Baby., *Idiklat*, Shum., *Edigna*) on account of growing scarcity of water due to the advancing desiccation. Here in these riparian plains where copper was introduced and the Neolithic gave way to the chalcolithic, a phase during which both stone and copper along with its alloy bronze were used together for some time before the Bronze age was established fully, a more gloomy a future and more miserable a life were waiting for the advent of the peasantry for they were going to bear still heaviar burden of feeding economically the urban development and imperialism for millenia to follow. In the Western Asia they began to spread far and wide into Iran and the Inner Asia and settled also in the marshes of the coastal southern Iraq or Kengi or Shumer, during the chalcolithic Eridu period (C. 4500 BC). They were also found in the adjacent Elamtu (Elam) or 'The Land of Rising Sun' on the southwestern littoral of Iran, where Susa became the capital. On the other side of Shumer was Amurrū or 'The Western Country' inhabited by nomadic herdsmen. The northern Iraq was known as 'Subartu', which later became the Land of Ashur (god) or Assyria as the Greeks called it. North of Subartu laid Urartu or modern Armenia, the home of the Mitanni Āryas (Aryans) during the second millenium BC.

75-I. "At the end of the Early Chalcolithic period, let us say c. 5000 BC, we find that throughout the greater part of the Near East all the requirements for the birth of civilization {urban life} were present. Villages, market towns, and the castles of local rulers dotted the more fertile parts of the countries....Shrines, such as at Eridu, and stone and clay figurines of the female deity expressed man's belief in higher powers. Nevertheless, the expected birth of civilization did not take place. It was delayed for nearly another millenium and a half" [Mellart, J., 'Roots in the Soil-The Beginning of Village & Urban Life', *The Dawn of Civilization*, Piggot, S., ed., Lon. 1961, pp. 62-3].

MIDDLE EASTERN VILLAGE PATTERN SPREADS TO INDIA

76-I. We have very little archaeological information as to what were the contemporary events in India when the Neolithic village life flourished in the Middle East. All we can say at present is that a microlithic culture complex, which was Mesolithic or early Neolithic in character we do not yet know for certain, is attested archaeologically at loessic dunes near Langhnaj in the western India; at the *theris* in the southern India, and at Birbhanpur in the eastern India near Durgapur, which are understood to date from before 4000 BC (Pandya, A. V., 'Pre-Aryan Gujarat,' Proc. 4th Gujarat Research Workers' Conf., Gujarat Research Society, 1963, pp. 50-1) or the fifth millemium BC. It was essentially Middle Eastern and was based on horticulture. In face of this fact, Kramer's location of the Kengian (the Shumerian or Sumerian) paradise named Dilmun from where the elements of the Urban Revolution were carried to Eridu[14] in Kengi (Sumer) by the water

14-The earliest site yet known in lower Iraq or ancient Kengi or Shumer has been found at Abu Shahrain near Ur, which is identified as Eridu, the earliest Shumerian city belonging to c. 4500 BC in its earliest phases. It was one of the most sacred cities of ancient Iraq, being earthly residence of Enki, the god of waters,

[Contd. on page 35]

and sea-god Enki ('Ea' according to the Akkadian reading), in the western India [45-I], poses a challenge to the Indian archaeology.

77-I. "A survey of the archaeological data," writes. G. V. Childe, "gathered from numerous *tells* between Mesopotania [Iraq] and the Indus basin..throws any light on the origins of farming. The intermediate space is occupied by the vast tableland of Iran. Two lines of arguments have led botanists to expect that once cereals grew wild round plateau. Wild sheep still graze on the mountain pastures. The Transcaspian steppe, just morth of the plateau, has long been regarded as the home of fast horses. The tells are strung out along most of the valleys and foothills in western Iran and thence spread eastward round the central desert [of Iran] on the one hand along the foothills of the Elburz with spurs into the Turanian basin and to the Helmund. The upland valleys of Baluchistan continue one series or the other. At Sialk, in western Iran, an outpost of Susian civilization crowns a sequence of stages that began where Jarmo left off, in a neolithic village. The villagers [of Sialk I] lived by mixed farming (cultivation and stock-raising). The crops were reaped with sickles armed with flint teeth (microliths with serrated edge), just like the Natufians (of Israel). Whorls attest a textile industry. Sialk II or Chashmah Ali is only an advanced phase of the Sialk I culture. Distinctive innovations are: the appearance of bones of horses and pigs—neither certainly domesticated. In pottery Redware (painted) was now predominant....Parallelism with Anau I culture in Turkmenia....a possible connection with the (chalcolithic) Halafian culture (of Iraq, c. 4500-4000 BC. chariot present)....The culture of Sialk III-I to 3, and Hissar I-A....With Sialk III-4, and Hissar I-B comes a dramatic advance, but without any break in cultural unity....professional smiths were now established ....a building is decorated with buttresses. Sialk III-7, was violently destroyed. Account tablets inscribed in the 'Proto-Elamite' pictographic script and cylinder seals engraved in the 'Jemdet Nasr' style....Several large tells in the now arid upland valley of the Zhob in northern Baluchistan have yielded pottery which exhibits really striking analogies to that of Hissar I-B (= Ubaid culture of Iraq, c. 4000-3500 BC.). The people of Rana Ghundai I (that

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the sea, and one of the chief gods of the Shumerian pantheon. The original residence of Enki was Dilmum, identified with western India by Kramer [45-I]. He was also god of knowledge and craftsmanship. Stone-cutters, goldsmiths, carpenters, etc., venerated him as their patron-deity. When Enlil decided to drown the mankind by Flood, it was Enki who warned Uta-Napishtim (Bib., Noah) and saved mankind. The Shumerian King List, written by the middle of the Third Dynasty of Uri (Ur of the Chaldes) about 2100 BC, begins with the statement, "When Kingship was lowered from Heaven the Kingship was in Eridu," and then continues with the rulers who reigned before the Flood or Deluge. Eight such antediluvian kings are listed, who after Eridu ruled at Badtibira, Larak, Sippar, and Shuruppak. Then came of the Flood whose story is found in the Shumerian epic of Gilgamish. After the Flood had subsided, the kingship was established at Kish.

succeeded in north Baluchistan the Qila Gulmuhammed I culture,[15] carbon-dated c. 3770 BC.) in the Zhob valley used hand-made pots and bred the Indian humped oxen, urial sheep, asses and horses.....In fact, there were Neolithic farmers in Baluchistan before unambiguous influence from the west is archaeoloically detectable.....Rana-Ghundai II is the settlement among south-east Asian farmers of professional potters bringing their wheels (the potter's wheel first appears during the Halaf period, c. 4200 BC) and the artistic tastes of northern Iran. The upper levels of Rana-ghundai III, show the development of a local style of polychrome pottery. These mark the sites of villages or even townships composed of mud-brick houses on stone foundations. Trade brought them copper.....flint arrow-heads may be indicative of warfare. A multitude of bangles.....the polychrome pottery of Rana-ghundai III has close affinities with the earlier Amri ware of Sindh and with that found beneath the citadel wall at Harappa itself.[16] Hence, Piggot considers that the whole Zhob series except the latest phase of Rana-ghundai III must be anterior to the Harappa civilization (c. 2300-1700 BC). Indeed, it might be through the Zhob that a western foundation for the latter reached the Indus valley." [*New Light on the Most Ancient East*, NY, 1952, pp. 189-98].

78-I. The above is a simplified representation of the movements of the Western wheat-barley cultivating farmers from the Fertile Crescent to India, as conceived by Gordon Childe. We, however, require hear a little more account of these events, as a preliminary to the chapter II, dealing with 'India's protohistoric archaeology, in which some inticrate archaeological details will be discussed, and this preliminary may be more helpful to the general reader for a grasp of facts. It is in view of this consideration that we are handling here in some detail the evoltion of the institutions of the priest, soldier, and ruler in the development of the early or the Neolithic rural life of the Western food-producing cradle, as a historical background to the village-pattern, with which the wheat-barley cultivating Western peasant (plough-using settle farmers [Fn. 4]) villagers spread practically all over India as a major movement during protohistoric (the origin of food-production down to the beginning of the Iron age in the Old World history by c. 1000 B. C.) times. It may be reccalled here that we were attempting to trace the furthest limits of the distribution of this community in the Gangetic basin and Peninsular India on the basis of their typical food-grains and traditional

15 - The Qila Gulmuhammad I [45-I] is an aceramic Neolithic culture which has not yet been found elsewhere in India. It is the succeeding Rana Ghundai I of the Zhob culture of northern Baluchistan dated c. 3500 BC, that provides an unbroken archaeological link with India's protohistoric urban cultures, namely, the Indus civilization or the Harappa culture (c. 2300-1700 BC), the Peninsular Protohistoric civilization (c. 2300-1000 BC), and the Painted Grey Ware culture or Hastinapur II (c. 1300-1200 BC). We would therefore lay more emphasis on the Rana Ghundai I phase of the Zhob culture in the present context.

16 - A. V. Pandya, who conducted an official survey of the Narmada valley during 1945-47, pointed out striking Zhob (III) culture affinities with archaeologically much similar chalcolithic culture of the village and town sites he had discovered on the Narmada between Omkareshwar and Shuklatirth, belonging to, what he termed the Peninsular Protohistoric Civilization [Pandya, A. V., 'Prehistoric Cultures discovered on the Narmada,' *Proc. Indian History Congress*, 1947, Bombay, pp. 179-94].

rural house-types, vis-a-vis the expansion in India of the rice-farming Eastern basic cultivators during the same protohistoric times.

79-I. As will be discussed in the chapter II, the antiquity of the nucleated settlements in India is hinted at as belonging to the last phase of the Middle Stone Age {4-I} of the Indian archaeology in the opinion of the author. It was coeval with the Upper Palaeolithic of Europe, and seems to have commenced more than 10,000 years BP, i. e, prior to the Neothermal {4-I} during the second aggradation cycle of the middle Narmada [Allchin, B., 'The Indian Middle Stone Age: Some New Sites in Central & Southern India and their Implications', *Bull. Inst. Arch.* II, Lon, 1959, pp. 1-36] correlated with the Fourth Glaciation (= Würm) Terrace 4 of the Soan river [De Terra, H, & Paterson, T. T., *Studies on the Ice Age in India & Associated Human Cultures*, Wash, 1939, pp. 320-6] in the Extra-Peninsular (Himalayan) northwestern India, and Upper gravel of the Pravara [Wheeler, R. E. M., *Early India & Pakistan*, 1959, pp. 64-7]. These Indian Middle Stone Age (Pre-Mesolithic) settlements, whose relics have been found widespread in the Neolithic-Chalcolithic town sites, might turn out to be the oldest villages of the human history found so far.

80-I. However, as the generally accepted archaeological facts stand at present, the villages based on the cultivation of wheat-barley, seem to have originated in the submontane Fertile Cresent, comprising a part of western Iran, northern Iraq, part of Türkiya (Turkey), Suriya (Syria), Lubnaniya (Lebanon), Israel, and Urduniya (Jordan) during the eighth millenium BC in the Mesolithic, and continued to develop with the rise of priests, soldiers, and rulers, as we have reviewed {65, 68-I} till c. 5500 BC, during the two phases of the post-Natufian (post-Mesolithic) southwest Asian Neolithic, the Pre-Pottery (PPN) or aceramic A (sites: Jericho PPN-I in Israel; Catalhuyuk in Türkiya; M' Leffat in n. Iraq, etc.), and Pre-Pottery B (Jericho PPN-II: Seyl Aqlat in Urduniya, c. 6930 BC; Hasilar in Türkiya; Jarmo in n. Iraq, etc.), and the Pottery or ceramic Neolithic (Jarmo PN, Hassuna also in n. Iraq, etc.). The people were primarily ancestor-worshippers as we know from the later evidence at Jericho B, Hasilar, etc. The earliest shrines occur in the Mesolithic Natufian culture of Israel, dated c. 8000 BC, showing the period by which the shaman had become the priest. Jericho of the Pre-Pottery Neolithic stage, c. 7800 BC, was already a fortified town. The fact bears witness to fairly an advanced degree of the external menace from the nomadic pastorals to the village life. This state of affairs gave rise to the formation of army as we have already noticed {73-I}. By the end of the Neolithic, c. 5500 BC, represented by Jarmo Pottery Neolithic B, Hassuna (n. Iraq), and in Iran by Sialk, that rulers' castles as separate quarters of a conspicuous nature appeared in these early villages. And in this form the typical nucleated village of the Western farming cradle began to spread in various directions including towards India in the east which we enconter in Baluchistan as we have reviewed in the words of G. V. Childe. It was not for the first time that the Western village, comprising box-type houses of mud and brick, spreads towards India. The process began earlier, for in both the intermediate Iran (Sialk I = Hassuna) and the Indian subcontinent we find the vestiges of the villages of the Pre-Pottery Neolithic stage (Qila Gulmuhammad I in Baluchistan, c. 38th century BC; and Utnur I -B, pre-2255 BC in south India), but these villages were mainly based on horticulture. Here we are concerned with the plough agriculture under which the villages became permanent and production of sufficient surplus-food became possible for a gradual development of the urban institutions in the next phase. At this stage we find the village pattern as including shrines,

rulers' castles, fortifications, etc.. This village pattern spread from the submontane Fertile Crescent to India. This cultural horizon of the Western basic farmers is represented by the early chalcolithic Ubaid (Iraq) c. 4000–3500 BC = Sialk III (Iran) = Shah Tepe III (Iran) = Hissar II (Iran) = Anau II (Turkmenistan, USSR) = Qila Gulmuhammad II (Baluchistan) c. 3500 BC = Rana ghundai I (Zhob valley, n. Baluchistan). The stage of this process is few centuries later in India, obviously because, it must have taken some time for it to reach this region from the Fertile Crescent.

81–I. The passage was neither easy, nor direct, because the presence of the inland seas in the heart of Iran where we find today the salt deserts of the Dasht-i-Kavir (Pers. *dasht* = 'plain': *kavir* = playa or salt desert or *rann* in India) and the Dasht-i-Lut (Pers. *lut* = 'barren') bifurcating it into: (1) a northern route to the Indo-Sarasvati basin in India via Bisitun, Hamadan (Ecbatana), Sialk, Qumm, Rayy, Tehran, Damghan, Nishapur, Mashhad (Meshed), Herat, Farrah (on the northern fringe of the Helmand basin which was an inland lake during protohistoric times), Kandahar (anct. Gāndhāra), and Quetta, on which the route to the inner Asian steppes across the Amu Darya or Aksu (Akshu river of the Puranas, Oxus of the Greeks) separated at Mashhad: and (2) a southern route by the way of Isfahan, Yezd, Kerman, Mirjawa (near Zahidan) in Baluchistan; or alternately via Kerman, Bampur, Tump, Panjgur and Kalat.

82–I. In the Old World Western Agricultural Region the presence of the sickle marks the pursuit of cereal cultivation practically at all the stages; and the occurrence of the pottery, too brittle for the nomadic pastorals to carry about normally, is the sign of the settled agrarian life in villages. During the aceramic Neolithic when vegetation was plentiful the farmers who had to store grain, dairy products, etc., did well with the containers of such organic but perishable materials as gourds, bamboo, skin, etc. The vegetation yielding all these grew scarcer and scarcer with the advancing desiccation in the Middle East; and during the late Neolithic containers began to be manufactured with hand and turned on the *tournette*

17. "While all historical evidene", writes Sir T. Holdich, "points to the Tehran–Mashad route as the great highway which linked Mesopotamia with Baktria in past ages, there are certain curious little indications that the southern road through Persia, via Yezd and Kirman, was also well-known, for it is a remarkable fact that it is in the villages and bazaars of Sind that the potters may be found whose conservative souls delight in the reproduction of a class of ornamental decoration which most clearly indicates an Assyrian origin. The direct route to Sind from Mesopotamia is not by way of Herat. It is via Kirman and Makran" [*Gates of India*, Lon., 1910, p. 54]. The sea route from the head of the Persian Gulf (The Eastern Sea of the Babylonians) to the Indo-Sarasvati delta, a distance about 1200 miles (some 150 miles more when Eridu was a port) by the way of Bahrain island, the ports of Bandar Abbas, Jask, or Pasni on the Makran coast, became more and more prominent with the advance of the desiccation, as it created more and more scarcity of water on the land-routes after the Neolithic, on one hand; and with the rapid development of urbanization during the succeeding Chalcolithic and Bronze ages in the two deltas, on account of increasing commercial relations for which testimony occurs both in archaeology and ancient Indian literature, on the other hand.

or slow-wheel in the course of the early Chalcolithic. During the full-fledged Chalcolithic the fast potter's wheel was introduced and the industry was developed to the extent that man found in its surface a suitable means for channellising his aesthetic feelings in the form of painted designs. It is on the pottery of the Chalcolithic period that we come across the representation of graphic art in archaeology after the rock-paintings of the upper Palaeolithic times, a time-span of some twenty millenia. In the course of the movements of the Old World Western Farmers from the Fertile Crescent towards the east, the contribution of Iran to their culture complex was painted pottery and metallurgy; but the set back was that the Irani environment did not promote urbanization which was destined to take place when these early Western farmers reached the open alluvial plains in the southern Iraq, the Shumerian Kengi, at the western end of the Iran plateau; and the Indo-sarasvati plain in India lying on its east.

83-I. Two typical painted pottery industries were developed in Iran : (1) a Red Ware having a light red wash on which the patterns were executed in black ('black-on-red' pottery as it is called), or also in dark red ('bichrome'), or in a number of colours ('polychrome'), arose in the area lying north of the former inland sea that covered the two *dashts* and south of the Caspian Sea, across which the north Iranian Sialk-Tehran—Mashhad route passed to Inner Asia and India; and (2) a Buff Ware having yellowish wash on the surface for decoration that originated in the area stretching south of the dried up Iranian sea, which was traversed by the Sialk-Bakun-Isfahan-Yezd route to Baluchistan. Both the ceramic wares passed their heritage to the Chalcolithic development in India which gave rise to two diverse protohistoric urban institutions. Both of them have been found in association of each other at Lothal, a port-site in western India. From the Red Ware Early Chalcolithic Iranian Culture forming the Ubaid-Sialk III-Hissar II-Gulmuhammad II-Rana ghundai-I archaeological horizon, which appears to have become mixed up on its way to India, with a horse breeding (equestrian) population as we know from the evidence at Sialk (the domesticated horse occurs at Sialk III, it was wild in Sialk II) and adopted some traits of an earlier alien culture, namely, the bangles of sea-shells which should have originally been belonged to a south-east Asian culture as we can say on the basis of conch industry. It gave rise in India to the Peninsular Protohistoric Civilization represented in Indian archaeological stratigraphy by Rana ghundai II-Nagda I-Maheshwar III-Prakāshā I-Eran I-Bahal I-Nasik I-Maski I-Brahmagiri I-Utnur I-B horizon (c. 2300—1000 BC). From the Buff Ware Iranian developed, after some mixtare, the Indus Civilization (Harappa culture) by c. 2300 BC. Both the Iranian cultures on entering the Indian subcontinent in Baluchistan came across the cult of the humped bull which is typically Indian and occurs in both the Indian urban developments. However, the only Iranian animal design that persisted on pottery of both these civilizations is the stag. All these Iranian and Baluchistan cultures and their two urban developments were based on the cultivation of wheat and barley. The village pattern they brought to India was essentially Middle Eastern, having a ruler's castle separate from the main village settlement, and fortifications, suggesting the prevalence of an aristocratic order above the society and a period of insecurity.

84-I. Archaeology does not help the cause of tracing the advent of the rice-cultivating Eastern basic farmers of the Old World into India and their movements to that extent as it does in the case of the Western farming communities. Among the Land Dayaks of Sarawak in Borneo the 'longhouse' occupies this position [Geddes, W. R., *The Land*

Dayaks of Sarawak, Lon. 1954]. It contains 100 or more people who form a kindred. Two or three such houses form a village. "Among the Nandi and many other East African people," "writes G. W. B. Huttingford," as well as in parts of Bengal, the homestead, a kin group, lives in relative isolation. A group of Nandi homestead forms a *koret*, or parish, a unit administered by a council of old men. Rural farm neighbourhoods in the United States represent another unit on the subvillage level" [*Nandi Work & Culture*, Lon. 1950, p. 15]. The communal houses, like the longhouses of Sarawak, are often found in matriarchal societies [Winick, C., *Dictionary of Anthropology*, Lon. 1960 p. 268]. The survival of matriarchy in the early Egyptian and Cretan civilizations {67-I} and the occurrence of nude mother-goddess figurines and phallic emblems in the oldest Middle Eastern agrarian cultures, and other traits we shall discuss later, suggest that a movement of the Southeast Asians had probably already passed through the Middle East before the Neolithic farmers of the Western agricultural region started their eastward migrations during the fourth millenium BC. "The fact that the coastal belt from India", writes Prof. H. von Wissmann, "over southern Arabia, to East Africa, with its dry climate, and thence along the banks of the Nile must have been an early road for migration, not merely a passage along which new cultural 'inventions' and goods were disseminated, results from the new anthropological research by Poech (M. S.), evaluating, among other materials, that of our expenditions in southern Arabia. She recognizes that two races, the Gondid and the Aethiopid, which both belong to the large family of 'Europoid' races, are to be found in India as well as in southern Arabia and in parts of East and North Africa....It is dominant and numerous in parts of central India. On the Nubian Nile a population of this race can be traced back as far as the Old Empire....In all regions of their distributions the people of the Gondid race belong to a busy agricultural population" ['Role of Nature in the Dry Belt of Asia', *Man's Role in Changing the Face of the Earth*, 1956, Chic., pp. 284-5]. The migration of the Southeast Asian fishermen and boatmen to the Middle East by way of the Indian coast where they have left many a fishing tribes and castes, is a problem that has recently stimulated more research. Another problem is, "The Black Belt, anthropologically speaking", states Prof. M. D. W. Jeffreys," is that area on the earth's surface that comprises the dark-skinned races. Excluding the American negroes who were brought here by Europeans, the black belt extends from Africa, via India, to Melanesia and Australia. In this great arc the position of the Negro is the enigma. At the two ends, or horns, are people who are Negroes, but in the centre there are none. The centre is occupied by a dark-skinned race, the Hindu, but he offers no difficulty. He belongs to the same race as the European, namely the Caucasian. How comes it then that east and west, India is flanked by Negroes? That is the puzzle." ['The Negro Enigma', *West African Review*, Sept., 1951].

85-I. The rice-cultivating Eastern agricultural society {43-I} had obviously no such challenging problems causing a rapid development of their socio-economic institutions and then giving rise to great ethnic movements over vast areas, like their Western counterparts had to face and solve, as we have reviewed briefly above. The life of these people in their gabled huts located in their fields in the 'dispersed settlement' pattern {39-I}, which shifted further and further on account of soil exhaustion, must have therefore been comparatively far happier, because practically every family who chose the new mode of economic life had land and other resources for subsistence and also some surplus that enabled them to develop a civilization of their own. Their animal-agressiveness sought its channel through tribal warfare, head-hunting raids, and expeditions to get victims for human sacrifice. We have already

taken note of the fact that there are two modes of cultivating the paddy { 21-I } : the 'hill rice' and 'wet paddy'. The two modes rendered the Eastern cultivators to confine themselves to two diverse types of agricultural environment { 43-I } with the result that one division of them spread in the hilly regions of India, namely, what has been termed the Mid-Indian Orographic Complex together with the Eastern Ghats { 41-I } : and the second division living by 'wet paddy' inhabited the plains of the Gangetic basin. We have noticed that per acre production of wet paddy is double of wheat { 21-I }. The fact suggests, on analogy with the same mode of cultivation as practised in the Pre-Columbian Meso-America and the Andean Altiplano, that the Eastern farmers of the Gangetic basin should have developed a civilization of their own, distinct from that of their Western brethren. The matter is going to be further discussed at a later stage. Here it may suffice to say that the answer is in the affirmative. An instance may here be quoted. The typically Far Eastern democratic village institution handled by an assembly of five elders permeated the social fabric of the Western nucleated village institution on its entry into India in the form of the *panchakshiti* [*Rigveda*, iv, 2, 5], which has persisted under the title *panchāyat* system down to our own times, and which the aristocrat of the Indian village of the Middle Eastern tradition had always honoured. This was a compromise between the two extreme systems of rural administration, the aristocracy of the Western agricultural cradle, and the democracy of the Eastern farming center. There must have been an agency to pass the *panchāyat* system from Southeast Asia to the Indian village of the Middle Eastern pattern. There was a third division of the Southeast Asian basic society comprising the fishermen and boatmen, who, moving along the Indian coast and carrying with them a sea-shell industry, reached the Middle East by the sea. The castes and tribes of the Nadiyāl and Pātni in Assam; the Mālo, the Ghālo, the Jalua, the Bāgdi, and the Jalia Kaibartta of Bengal; the Kevaṭ, the Ḍhimar, the Nāvḍā, the Bāri, the Kahār, the Machchuā, the Dhobi, etc. of Bihar, U. P., and M. P. ; the Vannān, the Uppiliyan, the Mannān, and the Uppār of south India; and the Injhwār, the Koli, the Khārvā, and the Vāghers of the Indian west coast are some of their remnants. The worship of the nude mother-goddess, matriarchy, domestication of the buffalo, the pig, the elephant, and the fowls, and the cultivation of cotton and sugarcane, were their distinctive features. We have already noticed the evidence of the westward movements of the Eastern farmers across Iran { 84-I }, and that in doing so they would have turned towards the Himalayan valleys in order to avoid the Indo-Sarasvati basin on account of its unsuitability for the cultivation of rice. In the course of their passage towards Misr (Egypt), they must have left behind somewhere the cultivation of rice. However, the division of them residing in the hills { 41-I } or the hill tribes were able to reach the Indo-Sarasvati basin as we shall discuss at a later place.

THE PRIEST IN INDIA : HIS ROLE IN SAVING THE INDIAN CIVILIZATION : HIS VOLUNTARY LIQUIDATION AS A HEREDITAY CLASS.

86-I. Let us turn again to the Western farming society as it was entering and spreading over India during protohistoric times. The Middle Eastern village pattern was modified in one main respect on its passage toward India. Unlike Iraq and Misr (Egypt), the priest of the Western village pattern in India did not assume the office of the ruler also as the priest-king (the Shumerian *patesi*). In the Middle East the king had certain risks at the early stage of his office, such as, that he must be ceremonially sacrificed or rule for

some years and then kill himself and all his retinue be killed and buried with him. The Indian priest or the Brāhmaṇa for certain reasons remained completely out of the ruler's office. The leader of the soldiers' *varṇa* or division became hereditary king in the Indian society, but the Brāhmana did not allow him to enjoy those powers as an embodiment of God which the king had in the Middle East, and established his own authority on practically all the affairs of the state as the priest, the guide, and the philosopher of the ruler and his *varṇa* in peace and war. The Brāhmaṇa imposed himself on the society as the highest *varṇa*, and subordinated the ruling and other *varṇas* in his own interest. He was more than a ruler and virtual leader of the society without any risk on his part, and kept the ruler engaged in grand religious ceremonies and often in warfare. Nevertheless, the Indian priest have had much to his credit also. He would have amassed great fortunes as did his counterpart in the Middle East, but he preferred of his own choice a simple and pious life. He undertook for himself the learning and education and regulating the affairs of the society and holding its leadership. He evolved a philosophy of life called Dharma with the principle of *ahiṃsā* or non-violence as its main foundation, and organized the stratification of the classes on this basis in the Indian society which was increasing enormously day by day on account of great immigrations that took place in this subcontinent during early Iron age. The caste is, no doubt, a curse on account of its hereditary nature, but this was the only solution to save the Indian civilization in those times. The problem was how to absorb such a vast incoming population into the Indian society. Some basis was required. Ahimsā, when it was sufficiently developed in theory, took this place. Those who rejected animal diet acquired higher status in the *varṇa* system. Those who took this diet were admitted to other *varṇas*. Those who took beaf publicly had no direct access to the Dharma organization. The Brāhmana has given the mankind the world's most copious and extensive ancient literature and philosophy. The Indian priest, in spite of all our censure he deserves for his errors, has virtually saved the Indian civilization when other civilizations have died out, and is now voluntarily liquidating himself as a hereditary class.

87–I. The elements of urban life, such as, the division of labour, arts and crafts of higher taste, money, writing, mathematics, science, etc., were developed in the Middle East under the patronage of the temple within its premises. We now know that three urban institutions [Fn. 15] developed in protohistoric India on the foundation of the Middle Eastern pattern village of the wheat-barley cultivating peasants, namely, the Indus Civilization (c. 2300–1700 BC), the Peninsular Protohistoric Civilization (c. 2300–1000 BC), and the Painted Grey Ware or Hastinapure II (c. 1300–1200 for Chalcolithic phase). The temple as the transitional stage between the ruralism and urbanism has not left its relics in the major part of India, except in south India where the institution developed on a Dravidian base has survived today in the precincts of the *rathas* and the *vimānas*.

88–I. That the communities of the three protohistoric Indian urban institutions developed by the Western basic farmers in India who cultivated and consumed wheat-barley had to change their staple after having crossed the Indo-Sarasvati basin, is an archaeologically attested fact. We have already noticed the circumstances under which how the terminal Chalcolithic Hastinapur II culture was associated with the Āryas who changed to rice as they crossed the Yamuna in the Doab. The other two civilizations, viz, the Indus Civilization and the Peninsular Protohistoric were more or less contemporary. The latter, whose traces have not yet been found in the Indus valley, was already well established on the middle

Narmada during the 24th century BC when the former was in occupation of the north India and had advanced in western India as far south as the Gulf of Cambay. Both of them are found as meeting at Lothal at the head of the gulf. What is of particular notice in this respect is that the two civilizations had already changed from wheat-barley to rice practically at the same time, as we know from the excavations at Nāvḍātoli and Lothal. "Besides this important change in pottery", writes H. D. Sankalia, "there was another very significant change in the life of the people. For the first couple of hundred years or so, the inhabitants ate principally among the cereal grains, two types of wheat, *Triticum vulgare compactum* and *Triticum* sp.....However, it is in Phase II and onwards that rice enters the dietary of the inhabitants" [*Prehistory & Protohistory in India*, Bom, 1962, p. 200]. Nāvḍātoli II is carbon-dated 1645 ± 130 BC [Lal, B. B., 'A Picture Emerges: An Assessment of the Carbon-14 Datings of the Protohistoric Cultures of the Indo-Pakistan Subcontinent', *AI*, 19 & 19, 1962-63, p. 216]. The wheat is the chief crop in the area of Maheshwar-Navdatoli at present. The evidence suggests a slight modification of climate in this area called Nimāḍ (Nimar) where the mean rainfall is 32" [*IG* XIX, p. 107]. For rice we require 40" or more as we have noticed { 21-I }. Here our hypothesis that the rainfall has decreased by 10" since the protohistoric times { 53-I } receives some support.

A DRIED UP ARM OF THE ARABIAN SEA IN WESTERN INDIA

89-I. Proceeding west from the Narmada valley we reach its mouth on the Gulf of Cambay. Here at the head of the gulf towards the west we find an ancient port-site named Lothal at the village Saragvāḷā near Dhandhuka on the bank of the same silted-up river bed on which Rangpur is situated a little to the north. The tract is called Bhāl or 'marsh' locally, which is well-known for its wheat. We have already taken note of the fact that Bhāl and the Ranns of Kachchha (Cutch or Kutch) were under navigable water during protohistoric times and that the river Sarasvati formerly fell ultimately into this sheet of water, which was an arm of the Arabian Sea in the form that the Gulf of Cambay and the Gulf of Kachchha met each other in the present Little Rann. It was possible in those times to proceed by boat to the heart of the Punjab by the way of both the Indus and the Sarasvati which ran parallel to each other across Sind. A pre-Indus culture (Kalibangan I = Kot Diji) which appears to be parental to the Peninsular Protohistoric has recently been found on the middle Sarasvati [Lal, B. B., *op. cit.*, 1962-63, p. 212]. The find of a Bahrain seal at Lothal bears witness to commercial relations by sea between the Persian Gulf and the Gulf of Cambay [Rao, S. R., 'Bahrain Seal from Lothal', *Antiquity*, XXXVII, 1963]. It appears that much commerce flourished between Iraq and the Indo-Sarasvati basin past Lothal in protohistoric times, more particularly during the Akkadian period (c. 2570-2285 BC) of the Mesopotamian history. During those times the Indus (Harappan) people in the Lothal-Rangpur area appear to have been cultivating and consuming the rice in the Bhāl, where wheat is grown today, though not eaten. The evidence from plant-materials shows, "the condition at present may" write S. S. Ghosh and Krishna Lal, "be little more arid due to biotic factors as well as denudation and erosion" ['Excavation at Rangpur & Other Explorations in Gujarat — Plant-Remains from Rangpur', *AI*, 18 & 19, 1962 & 63, p. 174]. The mean rainfall in the area has been fluctuating between 27" and 32" [*Gazetteer of the Bombay Presidency*, IV, Ahmedabad, Bom., 1879, p 20], which falls short by 10"—12" for the cultivation of paddy in the entire Bhāl. This evidence lends further support to our hypothesis that the rainfall has

reduced at least by 10" since the protohistoric times. It might have been even 15", but not more than that in view of the fact that wheat was cultivated in the Indus valley {51–I}.

THE PROCES OF CHANGE FROM WHEAT TO RICE

90–I. As we have already noticed {47–I}, the climatic change involving a 10"–15" reduction in rainfall, obviously gradual in the Indian subcontinent, must have set various agricultural populations on migrations towards the east and the south. Here it may be pointed out that this deterioration of precipitational conditions was a local phenomenon, not connected directly with the desiccation of the Middle East and the Inner Asia, except in the case of Baluchistan. We have seen {55–I} that the two agrarian communities raising rice and wheat–barley can live together in a single area in which the rainfall occurs between 50" and 40". Though wheat does not flourish normally under these conditions, but barley fares well in addition to rice. So those who are accustomed to wheat diet are also found accustomed to barley. In the marginal area of the paddy–cultivation therefore, those who eat wheat can pull on with barley, supplementing it with rice, and in the next stage can completely yield to rice. But real difficulty arises when a wheat – producing group tries to adopt the wet paddy – growing. The farmer must learn it from the original paddy – grower and this requires an atmosphere of good–will and co–operation between the two communities. This again goes against the invasion theory in the Indian historiography {42, 47, 48–I}.

91–I. Another significant feature of the process is that while in the Baluchistan sector of the Indian subcontinent we find the Indian offshoots of the wheat–barley–based Western complex of the Neolithic and the succeeding early Chalcolithic technological stages in the rural form, we come across them in their next developmental stage of the middle and and the late Chalcolithic, already developed into three urban manifestations, viz, the Indus Civilization, the Peninsular Protohistoric Civilization, and the Hastinapur II, at the time of their change to rice. This seems to have occurred by the end of the third millenium BC in the case of the two middle Chalcolithic civilizations (the Indus at Lothal, and the Peninsular Protohistoric at Maheshwar–Navdatoli), and the end of the second millinium BC in respect of the late Chalcolithic Hastinapure II (taking into consideration the wide gap of about a millenium between these two sets of cultures, one may reasonably suspect the presence of some more such elements within this time–margin, probably still lying undiscovered or ill–understood). The evidence shows that the process of urbanization entered the Peninsular India by the end of third millenium BC.

THE CRADLE OF EARLY INDIAN SYNTHESIS

92–I. The people of the Indus Civilization and those of Hastinapur II (Chalcolithic phase of the Painted Grey Ware Culture) seem to have already accomplished their complete change to rice when they are attested at Rangpur — Lothal (Bhal) and Hastinapur. It suggests that the process must have taken place somewhere between the Indus and the Yamuna in the eastern direction. The question now arises as to where this change, as well as the urbanization of these essentially Western peasant cultures, may have taken place? We have noticed that the area lying between the Indus and the Yamuna {6–I} was watered by a great river named the Sarasvati and its tributaries, which flowed from the Himalayas to

the Rann of Kachchha and is now represented by a dried up river-bed or *wādi*, comprising the interconnected beds of the Ghaggar, the Nāļi, the Hākḍā, the Wahindā, the Mihrān, and the Eastern Nārā. It is generally known in the Indian geographical literature as the 'Lost Sarasvati' [Spate, O. H. K., *India & Pakistan*, 1954, p. 483] or the 'Lost River of the Indian Desert' [Oldham, C. F., *JRAS*, 1893, p. 49]. In comparison to the Indus, the Ganga and other rivers of India, the Sarasvati, together with its tributaries, had certain additional qualities to be described later, that enabled it to give rise to the protohistoric development we have discussed. It corresponded in this respect more with the Nil (Nile), than other rivers.

All the above factors appear to have made the Sarasvati basin the cradle of the Indian Civilization, that is primarily a fusion between the two basic agricultural civilizations of the Old World which had originated as a result of the Subsistence Revolution in the human history.

DRY BED OF THE SARASVATI AS A GREAT HIGHWAY BETWEEN NORTH INDIA AND THE WEST COAST

93-I. The Sarasvati on its final drying up during the late centuries of the second millenium BC, as we shall discuss later, turned into a great refuge for the immigration of pastoral tribes of the Inner Asia on the desertion of its area by the cultivators, as we know in the light of ancient Indian literature. Besides, it developed into the great land route between the heart of north India and the west coast, as we know from the Mahabharata, Salya p., XXXV-XLIII, the Bhāgvata Purana, I, 10, Harivaṃśa, CXIII, etc., that it was a great thoroughfare between Hastinapur and Dvārāvati (Dwarka).

94-I. The quest of the Lost Sarasvati has been a subject of great fascination among geographists, historians, archaeologists, and others since Sir A. Burnes in 1834 ['Memoir on the Eastern Branch of the River Indus, giving an Account of the Alterations produced on it by an Earthquake, also a Theory of the Formation of the Runn', *Trans. RAS*, III, 1834, pp. 550-88] and more particularly in 1844 Major F. Mackeson wrote on it ['Report on the Route from Seersa to Bahawulpore', *JAS Beng.*, XLII, Pt. I., 1844,No. 145 to 153] with a recommendation to the Government of India to convert its bed into a great road from the sea-coast in Sind to Delhi via Bahawalpur, Maroṭ, Anupgarh, Suratgarh, Ḍābli, Kālibaggān, Bhaṭner (mod. Hanumangarh), Ṭibi and Sirsa. "Whether viewed with reference to," writes Mackeson, "the march of troops, military stores from the heart of our Upper Province at Delhi to Scinde, or to a direct line of *dak* from Delhi to Sukkur, the advantages of the new road are too obvious to be dwelt on. I am now to remark on the effect which the opening of the direct road from Delhi through Seersa to Bahawulpore will have upon commerce. This effect can only be fully developed when steam boats plying between Bombay and the mouth of the Indus, and hence to Bahawulpore, shall have rendered the transport of European manufacturers and other articles of commerce by that channel both safe and expeditious. We may then expect, from a comparison with the various routes by which the products and manufactures of Europe reach the great marts in the Upper Province and in the Punjab, that the route from Bombay to Bahawulpore by water, and thence by land through Seersa to Delhi, will have the advantage over all others in rapidity of communications and in other respects." [*op. cit.* pp. 12-14].

THE SARASVATI IN LEGEND AND LITERATURE

95-I. "From the earliest times," as writes H. Raychaudhuri [*Studies in Indian Antiquities*, Calcutta University, 1958, pp. 121–41], "the larger rivers of this country have enjoyed a position of importance not unlike that of the Nile in Egypt, the Tiber in Italy and the Yellow River in China. Already in the *Ṛigveda* we find many of them lauded as deities. The whole of one hymn sings the praise of the Sindhu and its affluents together with the Gaṅgā and the Yamunā, and is known as the *Nadīstuti*. Three hymns, besides numerous detached verses, celebrate the divine Sarasvatī, the 'mother of streams'. The Sarasvatī retains its preeminence among rivers and rivals the Gaṅgā in sanctity in the Epic as it rivals the Indus in the *Veda*. In the *Mārkaṇḍeya Purāṇa* the rivers described as *Sarvāḥ puṇyāḥ Sarasvatyaḥ, sarvāḥ Gaṅgāḥ samudogā Viśvasyaḥ mātaraḥ sarvāḥ sarvāḥ pāpaharāḥ smṛitāḥ*. On the Sarasvatī stood Pṛithūdaka, and along its bank stretched the Kāmyaka forest, the resort of the Pāṇḍu princes during the period of their exile. The river Sarasvati, which marks off Uttarāpatha from the Madhyadeśa, flows past the battlefield of Kurukshetra and Thaneśvar. The Narmadā formed the boundary line between Northern India and the Deccan."

96-I. "As one looks through the dim mists of antiquity, he cannot fail to note that civilization in India, as in Egypt, Iraq and China, dawned on the banks of great rivers. History bears witness to the fact that the tenor of cultural evolution, changes in material prosperity, and vicissitudes of politics have an intimate connection with alterations in the course and flow of the life-giving streams. Literature is full of echoes of such changes. Perhaps no river in our country has excited greater interest in this respect than the Sarasvati. This is the river *par excellence* in several hymns of the *Ṛigveda*, usually regarded as the oldest literary work of the Indo-Aryans. It is also alluded to in numerous later texts. From these references one get the impression that in the early Vedic age, probably not later than the middle of the second millennium BC., it was a mighty stream which had its source in the Himalayas and flowed through the Eastern Punjab (past the far-famed Kurukshetra of later ages) and ultimately found its way to the sea. From descriptions in numerous hymns and songs found scattered throughout our ancient literature, it is apparent that the river was lined with flourishing settlements of holy sages and prosperous clans on both banks where the broad features of ancient Indo-Aryan civilization and social polity took shape. But we look in vain for such a mighty river now in the eastern part of the modern Panjab. We have in its place an inconspicuous rivulet called the Sarsuti whose name however recalls the Sarasvati of olden times. It flows by the sacred sites of Kurukshetra including Sthānu Tirtha (Thanesar), and Pṛithūdaka (Pehova) near which it receives a small affluent called the Aruṇā. It is joined by a number of hill streams (the Lindā, the Mārkaṇḍā), enters the Paṭiālā territory and unites with a larger stream, the Ghaggar which likewise rises in the Siwaliks. The land between the Sarasvati on the north and the Dṛishadvatī (which has been identified with the Rakshi), a stream running in a south-westerly direction east of the Sarasvati, is the classical Brahmāvarta, said to be the holiest region in India (*Manusaṁhitā*, early centuries A. D.). Under the name Ghaggar, the united stream passes through the Patiala area, the Hissār district and the Bikāner territory down to Bahāwalpur and Sind where the dry course is continued under the name 'Hākṛā' which seems to have joined the great Mihrān of mediaeval writers. Throughout the deltaic flats of the Indus may still be seen old channels which once conducted its waters to the Rann of Cutch. In our own days the Sarsuti-Ghaggar flows in its wide sandy bed below the junction only for some months. In the

lower portion of its course in the Hissar district the bed of the river is dry from November to June, and grows excellent crops of wheat and rice. Even in the rains the water-supply is very capricious, and from time to time it fails entirely except in the immediate neighbourhood of the hills.[18] For the width of the Sarsuti–Ghaggar depression within the area of Bikaner is in places not less than two miles. At certain points it is four miles or more. Below Derāwar the dry beds have a deltaic look. The length and the width of the depression clearly indicate that we have to deal with the remnants of an once big river, and the identification would be complete if remains of ancient cities could be traced in its present arid basin. This attempt was made by several writers and explorers. Col. Tod sent a party in 1809.[19] Major Raverty emphasized the importance of the Hakra, 'of which the Sutlej was a tributary', more than half a century ago in a paper entitled '*The Mihran of Sind and its Tributaries*'. In 1920 Dr. L. P. Tessitori published the results of his exploration of the Ghaggar. In recent times the problem attracted the attention of Sir Aurel Stein, the famous explorer of Central Asia and translator of the '*Rājatarangini*'. In an article published in a geographical magazine he summarizes the results of his survey of ancient sites along the lost Sarasvati river. The rivers enumerated in the *Sārasvatopākhyana* of the *Mahabharata* as *Sapta Sarasvatyaḥ*, are as follows: the Suprabhā in Pushkara near Ajmer, the Kanchanakshi in Naimisha to the north-west of Lucknow, the Viśāla in the Gaya region, the Manorma in Uttara Kosala or Oudh, the Oghavati in Kurukshetra near Thanesar, the Sureṇu near Gaṅgadvara or Hardwar, and the Vimaloda on the Himalayas. Besides these seven Sarasvatis a few other streams also bore the same name, e. g., the river which takes its rise in Mount Abu traverses the contiguous forest (*Arbudaraṇya*) and flows past Patan into the little Rann of Cutch. In the *Mahabharata*, the *Vamana Puraṇa*, and certain verses of the *Prabhasakhanda* itself we have reference to a Sarasvati at Prabhāsa. The *Brihadharma Purāna* mentions the Sarasvatī at the Tribeṇi (Allahabad), and at the Muktabeṇi in the Hughly district where the westernmost triad of branches into which the Bhāgirathi divided was known as the Sarasvati. Of course, none of these rivers except perhaps the Oghavati can claim to be the Vedic Sarasvati. In the Pehowa inscription of Bhoja I of the Imperial Pratihāra Dynasty, the stream which flows past Pehowa receives the name *Prāchi* Sarasvati. The existence of a western Sarasvati is also supported by the *Avesta* which mentions a 'Harahvatī which clearly corresponds to the Sanskrit 'Sarasvatī'. This western Sarasvati can hardly be the Indus, as some scholars have thought, because in several passages of the *Ṛigveda*, VII. 36. 6, X. 64. 9, and 75. 4–5, the Sarasvati is carefully distinguished from the Sindhu, i. e., (the Indus). In all the Rigvedic hymns, for in III. 23.4 and X. 75.5, the Sarasvatī finds mention along with the Dṛishadvati (modern Rakshi) and the Āpayā (another branch of the Chitang), and occupies

18 – *Imp. Gazetteer of India, Vol.* I. 30; Rajputana, 1908, p. 98.

19 – "The Gaggar (Ghaggar), which rises in the Sewaluk, passes Hansi, Hissar, and flowed under the walls of Bhutnair (mod., Hanumangarh), at which place they yet have their walls in its bed. Thence it passed Rung–mahel, Bullur, and Phoolra, and through the flats of Khadal (of which Derrawul is the capital), empty itself according to some, below Ootch (Uch), but according to Abu-Birkat (whom I sent to explore in 1809, and who crossed the dry bed of a stream called the Khuggur, near Shahgurh), between Jessulmeer and Rori Bekher. If this could be authenticated, we should say at once that united with the branch from Dura, it gave its name to the Sangra, which unites with the Looni, enlarging the eastern branch of the Delta of the Indus" (Tod, *Rajasthan*, old ed., II. 253).

a place in the enumeration of rivers in the *Nadistuti*, between the Yamunā and the Sutudri (Sutlej)."

97–I. "In *Ṛigveda* VII. 95. 1–2 the Sarasvati is described as the chief and purest of rivers flowing from the mountains to the ocean (*yati giribhya ā samudrāt*). It sweeps away in its might all other waters. The five tribes in *Rigveda*, VI. 61. 12 may have reference to the Bharatas, the Kurus, the Ruśamas, the Matsyas, and the Videghas or Videhas before their migration to the banks of the Sadānirā, which it identified with the Gandak or some neighbouring stream. The seven sister streams are distinguished from the Sarasvati in *Rigveda*, VI. 61. 10 and apparently also in VIII. 54. 4. But in VII. 36. 6 the Sarasvatī is the seventh (*saptathi*). The "seven sisters" of the *Rigveda* may have formed the groundwork of the epic legend of the seven Sarasvatis. In *Rigveda*, II. 41. 16 the Sarasvatī is styled *ambitamā* and *naditamā*, best of mothers and best of rivers. 'Ascertaining the wishes of the great sages the best of rivers (the Sarasvati) incorporated the Aruṇā with her own body; formerly the flow (of the Aruṇā) was hidden. Afterwards (the Sarasvati) inundated the divine Aruṇā with its own waters.' It is clear that the Sarasvatī described in the hymns and songs noted above was a mightly stream that gave life and prosperity to a flourishing population. *Vajasaneyi Saṁhitā* says that "five rivers flowing on their way speed onward to the Sarasvatī, but then became the Sarasvati—a five-fold river in the land'. The description of the Sarasvati as *pañchadhā*—fivefold, or split up into five parts, may indicate that in its lower channel, while entering the areas now known as Bahawalpur (Cholistan) and Sind and perhaps also Marwar and the littotal of the Runn of Cutch, it had branched off into five distributaries or run into an equal number of distinct channels. Significantly enough Sir Aurel Stein in his survey expresses the opinion that below Derawar in the Bahawalpur State "the branching dry river beds have a deltaic look."

98–I. "On the left bank of the Ghaggar, after it has entered the State of Bikaner, stands Hanumangarh close to the ruined fort of Bhaṭner. Lower down the riverine belt there is Suratgarh (Bāgaḍ), 113 miles north by north-east of Bikaner city. Mounds in the neighbourhood of these towns yielded fragments of painted or relief decorated pottery, terracotta sculptures, etc. which Stein assigns to the Kushan period. More ancient sites were traced within the Bahawalpur area. These include the Sandhanawala Ther (mound) near Fort Abbas a little to the west of Walar and Bijnot between which 'an ancient winding bed (dry) of the Sutlej' is believed to have joined the Hakra. Excavation at Sandhanawala disclosed remains of chalcholithic times, *i. e.*, c. 2500 B. C. Stein is inclined to assign the Sandhanawala deposits to the third millennium B. C. It is suggested that the prehistoric occupation along the lower Hakra stopped after the branch of the Sutlej had ceased to join it. Agricultural life seems to have lasted longer on the Ghaggar higher up in the State of Bikaner. In modern times the flow of the river stops for the greater part of the year above Hanumangarh. The 'archaeologically attested' facts regarding the Ghaggar-Hakra bed clearly accord with the data supplied by Vedic and Epic tradition that in Vedic times there was a mighty river named Sarasvati with a continuous and perennial flow down to the sea. The width of the riverine belt, reaching in places four miles or more, the deltaic character of the portion below Derawar, and the presence of numerous mounds marking ancient sites on or near its banks, some of which go back to a remote antiquity, recall many famous hymns of the *Ṛigveda*."

99-I. "The story of the gradual decay of the once mighty stream is writ large in post-Rigvedic literature. It is possible that by the time of the *Vājasaneyi Saṁhitā* the Sarasvati had for most part of the year ceased to be a continuous stream. The expression *Pañchadhā* is open to this interpretation as well as the one already suggested. The very name Sarasvati '*abounding in pools or lakes*' suggests that from the beginning certain portions of its course looked like lakes (*saras*). These became very prominent in the period represented by the *Brāhmaṇas* and the Epics 550+x B. C. to 500 A. D. The *Mahābhārata* refers to *five* lakes at Samanata-pañchaka where the great battle between the Kurus and the Pāṇḍavas is said to have been fought. At this point the Sarasvati is particularly noted for its sanctity, which suggests antiquity of the site. In the *Vana Parva* we find mention of the Rāmahrada and the Triṇavindu-saras. The *S'alya Parva* mentions the Dvaipāyanahrada which looked like a second sea (*dvitiyamiva sāgaram*), and another lake (*hrada*) not far from the confluence of the Sarasvati and the Aruṇā. Some of these pools of water persisted down to 1,000 A. D., for a holy lake in Kurukshetra was noticed by Alberuni[1]. (C. 1000) A. D.). One of the most interesting lakes associated with the Sarasvati is the *Dvaitavanam saras* which finds mention in the *S'atapatha Brāhmaṇa* 550+x B.C. as well as in the Great Epic. To the tradition about the splitting up of the Sarasvati into several parts in a portion of its course is perhaps also to be attributed the confusion that the epic and Purāṇic poets make in representing the Sarasvati at Prabhāsa, the Arbudāraṇya, Dvaitavana, Kurukshetra, etc., as parts of the same stream."

100-I. "In the period of the Great Epic, the south bank of the Sarasvati in a part of the Kurukshetra area is described as *anirina*, not arid. In certain passages of the *Vana Parva* we have reference to trees and reeds lining its banks which mocked the blue (or height ?) of the sky. *Sarasvatyāḥ pare pāre nānādrumalatāvṛitam ākāśanīkāśataṭaṁ tīravānīrasaṅkulām.* Close to the Tṛiṇavindu *saras* further south, to which reference has already been made, lay the forest named Kāmyaka. On the banks of the lake Dvaitavana stretched another forest which bore the same name as the lake itself. *Tato'sarasvatīkūle sameshu marudhanvasu Kāmyakaṁ nāma dadṛisurvanaṁ munijanapriyaṁ.* 'Then they saw before them the forest named Kāmyaka on the banks of the Sarasvati *on a level and arid plain,* a favoured resort for hermit.' The word *maru* means a desert, and *dhanvan* has the sense of a dry soil, a tract scantily supplied with water. It is clear that vegetation at this point was nourished by the area that was noted for its fauna and had a population consisting of hermits and exiled princes. In a later passage of the epic we are distinctly told that the Kāmyaka forest stood at the head of a desert area (*marubhumeḥ śiraḥsthānam*), doubtless the desert of Marwar, close to the Tṛiṇavindu lake which must have supplied the water to which the forest owed its continued existence. At one point the bed of the Sarasvati seems to have been entirely smothered by the sand. It is apparently mentioned as *Adarśana* or *Vinaśana* 'place to disappearance' in legal codes and the epic. Neither the *Bodhāyana Dharmasūtra* nor the *Mānavadharmaśāstra* which alludes to the spot, gives us any clue as to its exact location. In the Great Epic, however, Vinaśana is placed on the borders of the land of the Sūdras and the Ābhiras."

101-I. "The Sūdras may be taken to correspond to the Sodrai of Diodoros, styled Sogdoi by Arrian. The Ābhiras were doubtless the people of Abiria placed by Ptolemy above Patalene or the Indus delta. The royal seat (*Basileion*) of the Sodrai lay below the confluence of the Akesines (Chenāb) and the Indus. The position of Vinaśana in the epic age (*cir.* 500 B. C. — 500 A. D.) was on the borders of the *janapada* of this city and the neighbouring

realm possibly Abiria, and could not have been very far away from *the riverine belt along the Hakra from about the assumed confluence with an old bed of the Sutlej, down to Derawar.*"

102–I. "Thus in the story of the Sarasvati we have a continuous record of the encroachment of the 'thick mantle of sands disintegrated from the subjacent rocks as well as blown in from the sea coast' for over 4,000 years, gradually smothering a great sea-going river, and taking the life out of cities and ranches, fields and forests. The process recalls the happenings in the valley of the Tarim in Central Asia. Is the desiccation attributable to 'a long continued and extreme degree of aridity of the region combined with the sand-drifting action of the south-west monsoon winds, which sweep through Rajputana for several months of the year without precipitating any part of the moisture contained in them"? Or have the moisture-bearing currents of air, whose interception by the lower Himalayan slopes in the Eastern Punjab set free the large volume of water which kept up the flow of the Sarasvati down to the sea in days of yore, been diverted elsewhere?"

103–I. "A suggestion may be made that the head-waters of the Sarasvati might have been captured by the Jumna or, preferably the Sutlej in historical times, this leading to a shrinkage in the volume of water carried by the Sarasvati, and thus leading to its gradual decay. The evidence of the *Tārīkh-i-Mubārak Shāh* suggests the last surmise.

FOUR STAGES OF THE LIFE OF THE SARASVATI

104–I. There emerges the following facts from the above brief survey of the references to the Sarasvati in India's ancient legend and literature comprising the Vedic, the Puranic, and the epic works recorded in the Old Indo-Aryan languages (the Vedic and the Classical Sanskrit) belonging to the Indo-Iranian branch of the Indo-European linguistic family, we have made in the words of Prof. Hemchandra Raychaudhari. The river has already passed through three stages of its life and a fourth has set in with the construction of canals since 1897. In the first stage, the Sarasvati basin till about the end of the third nullenium BC. when the Indus and other cultures flourished, it offered facilities to the cultivators of both wheat and rice. In the second stage during the major period of the second millenium BC. when the Vedic people were living, only wheat-barley could be grown. In the third stage since its 'drying up', it became unsuitable for agricultural activities, and the pastoral tribes from the Inner Asia occupied it. Now let us discuss some of the details of the processes that created these diverse anthropo-ecological conditions.

(I) The Sarasvati was a river larger than the Indus (Sindhu),[20] which in the Rigveda, the linguistically oldest extant work of the Vedic literature (it consists of linguistically

20– In all the cases of the English translation of the Rigvedic hymns, that of H. H. Wilson [Poona, 1927, I to VI vols], has been given in this work.

ā yat sākaṃ yaśayo vāvaśanāḥ sarasvatī saptathī sindhumātā
yāḥ sushvayanta sudughaḥ sudhārā abhi svena payasā pīpyanaḥ [Rv, VII, 36, 6].

"May the seventh (stream), Sarasvati, the mother of the Sindhu and those rivers that flow copious and fertilizing, bestowing abudance of food, and nourishing (the people) by their waters, come at once together."

[Contd. on page 51]

and also otherwise successive works the Saṃhitā, the Brāhman, the Āraṇyak, and the Upanishad, all pre-Buddhistic, i. e., pre-sixth century BC in date) comprising a saṃhitā containing hymns addressed to various deities of the Agricultural stage of religion {63-I.3} in the Old Indo-Aryan dateable for their linguistic stage to about the middle of the second millenium BC, is described as a river full of water flowing indeed from the mountains to the sea.[21]

(2) However, the very name of the river, the 'Saras-vati', in the Rigveda means 'abounding in pools and lakes', suggests that ever since the Rigvedic Indo-Europeans knew it, portions of the course of this river looked like 'lakes' (*saras*). This happens in the structure of a river flowing in plains, when, either its gradient becomes 'irregular' or 'disturbed' by action of earth movements, or when as result of setting in of desiccation (an area having rainfall under 10" becomes subjected to this process), the gradually shifting sand dunes attack its bed at several places. These physical events and processes create cross-bars against which the water is filled up in the form of reservoirs along its course. The contents of the Rigveda do not reflect the arid conditions prevailing in the Sarasvati basin, the main habitat of the Rigvedic people. To the contrary, descriptions of the cloudy weather, the presence of numerous lakes along the river, agricultural activity far more conspicuous than pastoralism, etc., in the hymns, and much indulgence in costly sacrificial ceremonies for which an hierarchy of priests so strikingly resembling that of Babylonia was maintained and that economically demanded high agricultural surpluses not available today in the area, all bear witness to better climatic conditions, that stand in contrast to the present state of affairs, when the area is more suited to pastoralism and only millets are grown where irrigation water has not reached from the Punjab. Proceeding from the Yamuna westwards, the summer rainfall or the monsoon occurs 27" in the district of Karnāl [*IG*, XV, p. 49], 20" in Ferozepur [*IG*, XII, p. 89], 18" in Rohtak [*IG*, XX, p. 310], 10" in Gangānagar, 5" Bahāwalpur [*IG*, VI, p. 195], and 3" in Larkānā [*IG*, XVI, p. 138], in which Moenjo-dhero (Mohenjo-daro) is located on the Indus. It is noteworthy in this connection that the amount of the winter rains that result from the influence of the Atlantic storms in the Indian subcontinent increases, as we proceed further and further westward from the Gangetic basin with the result that in Baluchistan while the mean summer rainfall is 2", the winter

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prakṣodasā dhāyasā sasr eshā sarasvatī dharūṇamāyasī pūḥ
prabābadhana rathyeva yāti vishvā apo mahina sindhuranyā. [Rv. VII, 95, 1]

"This Sarasvati, firm as a city made of āyas (copper, *vide* Cyprite *alasya*: Indo-European *ayos*: 'iron' is mentioned as *śyāma āyas* or 'black copper' in the *Atharva-veda* IX, 5, 4, etc.) flows rapidly with all sustaining water, sweeping away in its might all other waters, as a charioteer (clears the road).

21 – ekāchetat sarasvatī nadīnāṃ śuchiryatī giribhya ā samudrāt
rāyaśchetantī bhuvanasya bhurer ghṛitaṃ payo duduhe nāhushāya. [Rv, VII, 95, 2].

"Sarasvati, chief and purest of rivers, flowing from the mountains to the ocean, understood the request of Nahusha, and distributing riches among the many existing beings, milked for him butter and water."

precipitation exceeds to 5½" [Normand, C. W., quoted by Marshall, Sir John, *Mohenjo-Daro & the Indus Civilization* I, Lon., 1931, p. 4, this work will be referred as MIC in future references], which in the Merath (Meerut) district in the Gangetic Doab that forms the meeting-place of the Bengal and Bombay monsoon currents [*IG*, XVII, p. 254] is 33" and 1", respectively. The cultivation of wheat which have been found at protohistoric sites in this area {51-I} demands a rainfall between 32" and 20" without irrigation. Here again we receive support to our theory that the precipitation has decreased by 10-15" since protohistoric times. In view of these facts, the alternative left for us to find out an explanation of the irregularities on the gradient of the Sarasvati is to hold some pre-Rigvedic earth-movement responsible for this phenomenon. The Painted Grey Ware (PGW) culture that is post-Indus stratigraphically has primarily been identified with that of the Indo-Aryans {53-I} because it has been surmised that the authors of the Indus civilization were non - and pre-Aryans [*MIC*, I, pp. 109-12], so, if any archaeological culture has a claim to have been associated with the Indo-European Vedic Āryas, this post-Indus PGW culture is thought to fit better into the picture. The name 'Saras-vati' is etymologically Indo-Aryan. A hiatus has generally been found between the PGW and the Indus Civilization, attesting that the two peoples associated with them had not come into contact of each other. It therefore follows that the term 'Saras-vati' must have been coined by the Vedic Āryas, the PGW people, when they had immigrated to the Sarasvati basin, on having found that the river had a number of lakes along its beds. The authors of the earlier Indus Civilization and those of the still earlier Amri — Koṭ Ḍiji — Kālibaggaṇ ('Kali Bangan' is not correct form of the name; 'baggaṇ, like 'theḍ' denotes a *tell*) culture complex, who preceded the PGW people on the Sarasvati, must have had therefore a different name for the Sarasvati. The evidence on the whole shows that the decay of the river Sarasvati had already set in before the advent of the Vedic people and that the event must be assigned to some earth movement that would have occured prior to the Rigvedic period. We do not know if the hiatus between the PGW culture and the Indus Civilization had anything to do with this catastrophe that would have rendered the area uninhabitable by at least the sedentary agricultural people for some time. It is noteworthy in this connection that the course of the Sara svati lies entirely on an earthquake belt.

(3) It is interesting to note that in the *samhitas* other than the Rigveda, i. e., the Sāma -veda (*Sv.*), the Yajur-veda (*Yv.*), and the Atharva-veda (*Av.*), as also in the priestly manuals to the Vedic ritual called the Brāhmaṇas (c. 1000-800 BC; the Pañchaviṃśa, the Taittiriya, the Aitareya, the Jaiminiya, the S'atapatha, and the Gopatha), we find the contents in a late form of the Vedic Old Indo-Aryan language leading us to hold that when the Rigvedic people were at a Chalcolithic stage of technology (copper was used as we have noticed ; stone was also used side by side as we shall see later) in the Indo-Sarasvati basin, something happened there, and they were shifted *en masse* eastward and settled in the area lying between the middle Sarasvati and the Ganga traversed in the center by the Yamuna, which in the opinion of some geographers was formerly a tributary of the Sarasvati [Wadia, D. N., *Geology of India*, Lon., 1949, p. 41]. The area is referred to in the Rigveda as the territory of the Bhārata people [*Rv.* iii, 23, 4], but the later Vedic literature, mentioned above, speaks of it as

Plate I



Tell at Pehowa on the Prachi Sarasvati



Fort of Bhatner on the Nali (Sarasvati) at Kot Hanumangarh

(facing p. 52)

having been occupied by the Kurus [*Yv, Vājasaneyī saṁhitā*, Vs, xi, 3, 3]. In the course of this momentous shift upstream the Sarasvati and into the upper Doab, some important changes were experienced by the Rigvedic community, for instance, (i) the change of diet from wheat-barley mentioned in the Rigveda { 25-I }; (ii) the introduction of iron which does not find reference in the Rigveda, but is mentioned in the later Vedic literature as we have seen; (iii) the addition of a fourth *varṇa* and together with it that of a fourth *veda*, the Atharva, to the Rigvedic society which had three *varnās*, the Brāhmana, the Rājanya or warrior-ruler class, and the Vaiśya or the cultivator class, [Rv, viii, 35, 16-18]; (iv) the appearance of the references to ' maru-bhūmi ' or ' desert ', which do not occur in the Rigveda, and the mention of the Sarasvati in the Yajur-veda, Vs. { 97-I } as a fragmented river; and other facts, that we shall discuss later on. This sort of references to the Sarasvati appear to offer the reason why the Rigvedic people moved to an area of a different ecology. It suggests that the Sarasvati had dried up in parts and the desert which we now call the *Thaṛ* (Thar) had come into existence. It was a clear case of a great earthquake as we find its accounts in the two Indian epics, the Rāmāyaṇa and the Mahābhārata, which though have come down to us – when their last recension was compiled – in the Classical Sanskrit, profess to contain earlier protohistoric accounts not completely unreliable for ~~Hastināpur { 53-I }~~ is not mentioned in the Rāmayāna, and Pāṭali-putra founded by Udāyin, c. 500 BC, is not known to the Mahābhārata. It may incidentally be stated here that, as we shall see in detail later, this advent of the Vedic people into the Gangetic basin does not mark the first entry of the Āryas into the region. The Indo-Aryans of a pre-Vedic wave were already in the occupation of the Gangetic valley, who, if we believe their traditional accounts found in a literature called the Purāṇas or ' ancient lore ' which though mentioned in the Atharva-veda, XV, 6, 4, have come down to us in the post-Vedic Classical Sanskrit, had already passed the Golden Age of their history and it was indeed the period of the decadence of a civilization in the Gangetic valley when the Vedic Indo-Aryans set their foot on the soil of Kuru-Panāchāla just a few generations before the Mahābhāratā War, the theme of the mankind's largest literary work in verse. This War was looked upon as the end of the ancient Indian history according to the Puranas. In the epic Mahābhārata, Bhishma – parva, IX, Sanjaya addresses to Yudhisṭhira, who was about 93 rd in the Lunar dynasty that was first established at Pratisṭhāna (Old Ghusi at Allahabad) at the confluence of the Ganga and Yamuna where the Doab ends :—

> " I say, now, O Bhārata ! I am going to tell you the history of your land Bhārata —the land where Indra was worshipped—the land dear to Manu Vaivasvata, the land dear to the first sovereign Prithu, the land of Ikshvāku, the land of Māndhātṛi and Nahusha, the country of Muchukunda, and Śibi the Auśināra, of Ṛshabha, Aila and Nṛiga, of Kuśika and Gādhi, of Somaka, and Dilipa—Bhārata of theirs, and dear unto them. "

BEFORE IT RECEIVED THE NAME ' SARASVATI '

105-I. It follows from what has been stated above, that prior to the Rigvedic Indo-Aryans settled in the Indo-Sarasvati basin some time during the middle of the second

millenium BC or a little earlier,[22] the Sarasvati had already suffered the adverse effects of some earth movement that had created the barriers on its way giving rise to the origin of numerous lakes in its bed; the lakes whose occurrences prompted the new people to coin the name 'Saras-vati' for the river. But this can only happen when there were no earlier people to tell them the original name of the river, otherwise there was normally no need for them to find out a new name for it. As the name belongs etymologically to the Vedic Old Indo-Aryan, it can hardly be a borrowed one from a previous population. It is probable that this very catastrophe may have been the chief cause of the desertion of the Sarasvati basin by a pre-Rigvedic population, which, if the identification of the PGW people with them is valid as it appears very likely to be so, must have been the Indus people, i. e; the authors of the Indus Civilization or the Harappa culture. The catastrophe, in absence of more evidence, may tentatively be taken to have occurred by 2000 BC, as B. B. Lal surmises [*AI*, 1963, p. 219], in the light of the latest carbon-date 2045 ± 75 from the Indus stratum at Kālibaggāṇ, situated near Hanumangarh (Gangānagar Dist., Rajasthan) on the old bed of the Sarasvati. We have already referred to the presence of an archaeological hiatus of a general character between the Indus and the PGW cultures about which we shall again speak (this later fact not taken into consideration till now by the archaeological profession goes indeed against all the theories that the 'Vedic Aryans' were responsible for the destruction of the Indus civilization). In spite of this damage to the structure of the Sarasvati, it continued to be a well-flowing river so long as the Rigvedic settlements lasted on it, as we can glean from the prayers and hymns of the Rigveda [I, 14, 5; 22, I; II, 3, 9; 4, 9; III, 2, 11; VI, 6, 6; 6, etc.], and higher amount of rainfall in those protohistoric times may well have been a substantially contributing factor to a happy state of affairs for a peasant community. The flood-plain and bed of a river with a damaged course leave seasonally their highly replinished portions for a cultivation yielding bumper crops with the least of efforts (Suratgarh farm, for instance, is now exploiting this opportunity : it entirely lies in the bed of the former Sarasvati, which in this part, called Bāgaḍ, or ancient Jāngala, is known as the Nāḷī). In the Middle East, the Nil in Misr was the only river that afforded this sort of facilities. These conditions, however, were suited to the cultivation of wheat and barley, but not rice. The occurrence of flat

22.- The iron-bearing upper or later portion of the PGW culture assigned tentatively to the Vedic Indo-Aryans, has been carbon-dated c. 1075 BC {51·I}. The bronze -containing earlier portion of this very stratum at Hastinapur, termed Hastinapur II {51·I}, must therefore belong to c. 12-13 th century BC or little earlier. We have already noticed that Rigveda mentions copper but not iron, hence their first presence in the Doab may well belong to this period (the carbon-date from the substance of a dubious context from Hastinapur II should be ruled out in view of other evidence). Their settlements on the Sarasvati in their early phase should belong to a slightly earlier period, say, c. 13-14 th cent. BC. The Old Indo-Aryan language of the Rigveda bears witness to have come into contact of the Dravidian -speakers as the presence of the pecularly Dravidian cerebral consonants in its phonology points out. A comparison of the Vedic phonology with that of the Avestic *gāthas* shows that this assimilation was an Indian phenomenon. The process of this phonological assimilation must have taken the period of a few generations, indeed. Thus the date c. 1500 BC guessed by the Indologists and adopted from them by archaeologists receives some support from other sources.

roofed houses { 57-I } in the protohistoric cultures of the entire Indo-Sarasvati basin bears witness to the fact that the rainfall remained within the range of its suitability for the farming of wheat, otherwise gabled houses like those of the Eastern basic agricultural communities would have been required under the conditions favouring the paddy growing. The trans-Indus areas of Baluchistan and the North-West Frontier, which were more under the influence of the Atlantic rainstorms than that of the monsoon, as we have noticed { 8-I }, and were marginal to the process of Afrasian desiccation, whose influence these areas would have felt but the effects of the higher monsoon would have been helpful to maintain a balance between the economies of the peasant and the shepherd. The Sarasvati basin was not only more fertile agriculturally, but was located at comparatively a safer distance for peaceful conditions in comparison to that of the Indus. Under the circumstances, its contribution to the development of urban institutions by the rural cultures that had entered the Indus valley from the west { 77, 83-I }, would have been more than that of other rivers of north India. Such peaceful and sound economic conditions do not give impetus only to material progress, but at the same time, they promote also the development of mind and morals. The conditions pre-requisite to the evolution of the philosophy of the Upanishads, the climax of the Indian thought that was to have matured in the next stage of the structure of the river, had already developed on the Sarasvati. Much to the disappointment of the archaeologist and the art-historian, the protohistoric India, like its contemporaries in the west, has not left for the posterity great monuments like the Pyramids of Ghiza, the temples of Karnak, the ziggurats of Babylon, and the palaces of Khorsabad and Susa, because, much to the appreciation of the humanitarian and the sociologist, the peasantry in India, though already reduced in the social hierarchy to the level of that of the Middle East { 68-I, Fn. 12 } by the priest and the warrior, was not condemned forcibly to construct monuments for the glory of the rulers.

THE EASTERN BASIC FARMERS AND CHANGE FROM RICE TO WHEAT

106-I. We have reviewed some environmental factors pertaining to the wheat-barley growing Western peasants, which they would have met with on the Sarasvati. Now let us do so in connection with the westward movement of the wet-paddy farming Eastern cultivators { 43-I }, because somewhere they must have crossed the north Indian plain on their way to the Middle East, even prior to the Middle Eastern peasants began to spread eastwards { 84, 85-I }. We have discussed certain environmental possibilities in this connection. Under the existing climatic conditions, they should have left the Gangetic plain between Allahabad and Kanpur, turning thence towards the foot of the Himalayas, where ideal opportunities for rice-cultivation prevail { 43, I }. Later, we found that the rainfall has been reduced by at least 10" since protohistoric times, and that the Yamuna formed a rough border between the zones of rice and wheat during the PGW culture or the later half of the second millinium BC. The contents of the Rigveda do not bear witness for the Rigvedic people to have come into the contact of a rice-farming people on the Sarasvati { 105-I }. But, before the assumed pre-Rigvedic catastrophe of c. 2000 BC when the bed of the Sarasvati is understood to have been damaged and consequently lakes came into existence on its course, and when the people of the Indus

Civilization, as also of the earlier Kalibaggan I culture flourished on it, conditions for wet paddy may well have obtained. The Nāḷi, as the Sarasvati *wadi* is known in Bāgaḍ, has much wider a bed than the Indus. At the end of the monsoon the conditions for rice farming becomes ideal these days here and there on its flood-plain, and the present inhabitants do not miss to exploit the opportunity. The present rehabilitated population from the Punjab, do not eat rice as their normal food. They, however, raise the wet paddy crops for the market. We know that the Indus Civilization, belonging essentially to the Western basic agriculture, was based on wheat-barley and dairying. Its original domestic animals must therefore have been the sheep, the goat, the cattle, and in the case of the Inner Asian extension of this culture complex, the horse. The preponderance of the bull on the Indus seals bears witness to this fact. But, the presence of the elephant, the rhinoceros, the buffalo, etc., the animals that essentially belonged to the rice-cultivating Eastern agriculturists who supplemented their diet with fish, just as the Westerners did so with dairying, suggests a fusion between these two basic agricultural civilizations of the Old World. This fusion, in view of the anthropo-ecological considerations we have discussed, must have occurred somewhere between the Indus and the Ganga, and, since Yamuna was a tributary of the Sarasvati during the pre-Vedic period, the Sarasvati appears indeed to be the sole claimant for this place of pride. Further details in this respect will follow in a subsequent chapter.

INDIC PRINCES IN THE MIDDLE EASTERN POLITICS: THEIR HUMANITARIAN APPROACH

107-I. The above first phase of the Saravati came to an end with the occurrence of earthquakes probably soon after 2000 BC. [104-I(I)]. During the second phase that followed, the basin of the river which was a parkland in the first phase decayed into a savannah as we can say on the basis of its physiography as depicted in the Rigvedic hymns, and the absence of references to rice in them, a suggestive state of affairs in regard to climatic conditions. The Sarasvati of the second stage seems to have been a satisfactorily-flowing river, probably because the rainfall was higher. It had numerous lakes on its bed. We have also seen how an archaeological hiatus occurs generally between the Indus and the PGW cultures, suggesting that the area remained uninhabited by settled people for some time. About 1500 BC or slightly earlier [104-I(2)] we find in the light of the literature and linguistics that a people calling themselves the Ārya [*Rv.* I. 51, 8; 130, 8; 156, 5, etc.] and referred to as the *daēva-s* in the *Avesta* [*Vendīdād*, V, 60, VI, 9, etc.], the sacred book of their Iranian cognates, were settled in the Indo-Sarasvati basin. They had their main cultural centers on the banks of the Sarasvati. The traditions of these Rigvedic people as they reflect through their literature point out that while they were living in an earlier abode, they came in conflict and remained in hostile terms with a people whom they called the Asuras. The latter people are safely identifiable with the Ashurs or the Assyrians of the northern Iraq lying adjacent to Kurdistan. The religion of the Vedic Āryas appears to be a compromise between an Inner Asian horse and solar cult of a pastoral state and the Shumero-Semitic religion of the Agricultural horizon. The aristocratic Ārya class that had imposed itself on the 'Asianic' Mitanni (c. 1525-1250 BC) food-producers in northern Iraq and Kurdistan who were known to have been the arch enemies of the Assyrians; and of the Kassites of Babylonia (c. 1746-1171 BC) who had subjugated the Semites of Iraq, who conquered the western Asia with their new innovation the war chariot, and worshipped the Vedic Indian deities

S'urias ('Sūrya', Kassites), Indas ('Indra', Kass.), Maruttaš ('Maruta', Kass.), In-da-ra ('Indra', Mitannians), U-ru-va-na ('Varuna', Mit.), Mi-it-ta-r ('Mitra', Mit.), Na-ša-at-ti-i-ia ('Nāsatya', Mit.), etc., were both linguistically and religiously related to the Indian Vedic community. The main difference between the Kaššī-Mitannis of the Western Asia, on one hand, and the Vedo-Avestic or the Indo-Iranians of India and Iran, on the other, was that, whereas the former were an aristocratic Ārya class among the alien peoples in Western Asia, the latter were the food-producing Ārya (the term means primarily the 'plough-cultivator') masses. The evidence of the presence of Ārya masses elsewhere in the ancient world has not yet been found. We may therefore connect these aristocracies for their origin as a distinct class with the Indo-Iranian masses, and when we take into consideration their religion, it tallies with that of the Indo-Aryans, i. e. the Vedic people of the Indo-Sarasvati basin. Aristocracy is a development of the agricultural stage and the Kaššī-Mitannis can hardly be traced to the pastoral stage of the equestrian Āryas. The Kassites began to appear in Babylonia by c. 1775 BC and the language of the two Western Asian Ārya aristocracies belongs to a proto-Vedic stage that must have existed somewhere in India during the third millenium BC at the time when the Indus and the Peninsular Protohistoric Civilizations were flourishing in the northern India. The issue involves the presence of a proto-Vedic Ārya community in India during the late period of the third millenium BC and maturization of the originally Middle Eastern institution of aristocracy into an Indian mould. The facts as they stand lead us to the inference that the proto-Vedic Ārya princes carrying with them the horse-driven war-chariot had proceeded from India to the Middle East, where they first appears as the Kaššites in Babylonia during the reign of Khammurabi (1792-1750 BC), they organized the indigenous Semitic population which was linguistically Akkadian and established themselves peacefully as the rulers of Babylonia which they called Kara-Duniash in their records, by 1595 BC and bestowed peace and prosperity on the population which was previously highly taxed (68, 73-I) and suppressed.

108-I. Victory in warfare has primarily depended more and more on new inventions in weapons and strategy, rather than on sheer physical strength of the warrior. The invention of the 'guided missiles' in the form of 'bow and arrow' during the hunting-gathering stage in the Upper Palaeolithic (4-I) revolutionized the ancient warfare. The bow and arrow continued into the agricultural stage and such early leading communities of this stage as the Shumerians, the Egyptians, and others used it, but the former added to the warfare animal-drawn chariot and with that they made their conquests. After this, the Āryas introduced the fast-running animal the horse with which they embarked upon their conquests and soon after they succeeded in developing a two-wheeled light chariot for the warrior drawn by swift horses and the innovation proved very effective. The key of the Āryan victory lay in the war-chariot. The two Indo-Aryan aristocracies among the Kaššī-Mitānni in the Middle East of the second millenium BC, may well have set out of India to the Middle East in order to give a trial to the war-chariot, (its structure is described in the ancient Indo-Aryan literature [Piggot, S., *Prehistoric India*, Penguin, 1961, pp. 273-82] and in none other) apparently with imperialistic aims and no other purpose seems likely in this case. However, it is somewhat surprising that we find them trying through peaceful means to win the heart of the indigenous people for their aims. They first mixed up with the masses and organized them in favour of their leadership. They introduced in the Middle East the horse, their sacred animal. It is a distinctive feature of the Indo-Aryan aristocracies of the Middle East, that their personal

names, as also of the Khatti aristocracy of Asia Minor which linguistically belonged to the *centum* division of the Indo-European linguistic family, and in most cases with the termination —*ash* (Sans. 'aśva', 'horse'; Old Iranian, 'asps'), a feature also shared by the Puranic dynasties of early Indian rulers. The Kassi princes worshipped also the Babylonian and other indigenous gods together with those of their own, namely, Shuriash, Maruttash, Indash, etc. "In domestic policy", writes H. W. F. Saggs, "Kassite government seems to have been mild and unoppressive. Extant charters promulgated by the Kassite kings indicate that they were liberal rulers:....and absence of native risings may well have been related to this liberality" [*The Greatness that was Babylon*, Lon., 1962, p. 79.]." "The Kassites", states G. Roux, "restored order, peace and unity in a country devastated by half a millenium of war, kept up with Mesopotamian traditions and behaved in every way like good, sensible Mesopotamian monarchs" [*Ancient Iraq*, Lon., 1964, p. 203]. They ruled as a continuous single dynasty longest (425 years) in the history of Western Asia. They inaugurated a period of renaissance. Ulamburiash re-united Balylonia. Kurigalzu II restored the great temples at Eridu, Ur, Uruk, Nippur and Larsa and built up a new capital Duru ('fort') Kurigalzu. They added some new features to the Mesopotamian art, viz., relief in moulded brick, a peculiar type of cylinder seals, the *kudurru* boundary-stones that look like the prototypes of the Indian memorial stones. The Shumero-Akkadian myths and legends that were recast during the time of the First Babylonian Dynasty (c. 1894-1741 BC), were edited and couched in the Standard Babylonian under the patronage of this Indic dynasty of Babylonia. By the time of Kara-Indash, the renascent Babylonia became sufficiently important to warrant an exchange of ambassadors with Misr (Egypt) of the Eighteenth Dynasty (1580-1372 BC).

109-I. "Assyria gained independence", writes Prof. S. A. Pallis, "already under Hammurabi's successor Samsu-iluna (1749-1712 BC), but it was not until the Hittites conquered Babylon (1595 BC) that it became possible for the Assyrian rulers to strengthen their position. The rule of the Sea-land Dynasty and the Kassites in Babylonia, must further have helped on the independence of Assyria....The westward expansion of Assyria soon stopped.... Fresh power factors entered upon the stage of the Middle East, where previously only the Sumerian and Babylonian rulers had played their role, while Egypt remained quiescent. It is the rise of the Hittite (Khatti) kingdom (c. 1740-1460). The ruling caste in the Hittite kingdom were Indo-Europeans. The Kassites who conquered Babylonia when she had become weakened after the Hittite attack, came from the east, and from the names of persons and gods fashioned on an Indian model we see plainly that their rulers were Indo-Europeans, but in the region between Asia Minor and Assyria also, we meet these peoples, new to the Middle East....In 13 Amarna letters addressed to the Egyptian pharaohs, we see the rulers of the new state call themselves kings [of the 'Marianna' caste] of Mitānni (*šar mâtu* mi-i-it-ta-an-ni). Names of rulers such as Artamanya, Artatama, S'uwardata, S'ubandu, S'utarna, Dusharatta, show us that the rulers are Indo-Europeans ....With its (Mitānni kingdom) center in the north Syrian Habur district and its capital Washshukkanni near Tell Halaf it extends eastward, including part of Gutium in the Zagros Mountains with the city of Arrapha (Kirkuk) as its principal town. We do not know the causes of the rapid rise of Mitanni, but the Hittite kingdom in eastern Asia Minor seemed incapable of further expansion after the raid on Babylonia. At any rate, Saushshatar, king of Mitanni, conquered the whole of Assyria and secured its western frontiers by its friendly relations with Egypt. We know that the daughter of Saushshatar's son Artatama I was given in marriage c. 1420 BC to

Thothmes IV.... The brilliant rise of the Hittite realm { New Hittite, c. 1460-1200 BC } and its subsequent complete disappearance will be discussed later; here we may note that the disintegration of the mighty Mitannian state brought about the final liberation of Assyria from a foreign yoke" [Pallis, Svend Aage, *The Antiquity of Iraq*, 1956, Copenhagen, pp. 615-7].

110-I. "During the same period (c. 1400 BC.)," writes Childe, "the Amarna tablets mention Aryan princes in Syria and Palestine too — Biridiśwa of Yenoam, Šuwardata of Keilah, Yaśdata of Taanach, Artamanya of Zir-Bashan" (*The Aryans*, 1926, p. 19). "The earliest recorded traces of the Aryan peoples," states T. Burrow, "come neither from India nor from Iran, but from the Near East. The list of royal names preserved in a variety of cuneiform documents has a distinctly Aryan appearance. The names of these kings are as follows : *Sutarna*, *Parśasatar*, *Saušśatar*, *Artadāma*, *Artaśumara*, *Duśratha*, *Matiwaza*, i. e., in Indo-Aryan form *Sutarana* - (cf. Vedic *sutārman* -), Parśāstār - 'director-ruler', *Sauksatra* - 'son of *Suksatra* *Rtadhāman* - (nom. *Rtadhāmā*), V. S. *Ṛtasmara* - 'mindfull of right', *Tviṣratha*, cf. V. *tveṣāratha* 'having rushing chariots', Mativāja 'victorious through prayer'. In addition there are found in private documents from this area written in Assyrian a number of proper names of local notables which can be interpreted as Aryan, e. g., *Artamna*, *Bardaśva*, *Biryaśura*, *Puruša*, *S'aimaśura*, *Satawaza*, i. e., *Rtamna* - 'mindful of the law', Vaṛddhāśva - 'son of Vṛddhāśva -, Virya-śūra - 'hero of valour', Pūruṣa - 'man, male', Kṣemaśūra - 'hero of peace or security', Sātavāja - 'who has won prizes' (Bvr. cf. v. Vājasāti). This was a period of the expansion of Mitanni influence in the surrounding territories. Consequently we come across rulers of neighbouring principalities having similar Aryan names, and this extends as far as Syria and Palestine. The clearest examples of Aryan names among these are *S'uvardata*, *svardāta* - 'given by heaven', *S'ataura*, *Satvara* - a stem bearing the same relation to Skt. *sātvan* 'powerful, victorious, a warrior', as does Skt. *iśvarā* 'lord' to Avestic *isvan*; *Artamanya* : *Ṛtamanya* 'thinking on the law', *Biridaśva* : *Vṛddhāśva* - 'possessing large horses', *Biryawāza* : *Viryavāja* - 'having the prize of valour', *Indarota* : Indrota (RV) 'helped by Indra', S'ubandu : Subandhu." [*The Sanskrit Language*, 1955, p. 27].

111-I. With the aid of their chariotry the Indic princes were able to conquer the entire Western Asia and in the sixteenth century BC the Mitannis were knocking at the doors of Egypt, which had freshly emerged from the foreign rule of the Hequ-Shasu ('the rulers from foreign country') or the Hyksos (c. 1720-1570 BC), who had introduced the horse in Egypt and North Africa and are suspected to have been an offshoot of the Indo-European people [Childe, G. V., *The Aryans*, 1926, p. 24]. About two centuries had elapsed since the war-chariot was introduced and it was now no more the monopoly of the Indo-European aristocracies in the Middle East. Foreign experts in equestrian lore and chariotry were to be found at the courts of the Egyption, Semitic and other kings. "The archives of Boghazkoi in Asia Minor", writes Prof. O. R. Gurney, "contained an elaborate work in four tablets on training and acclimatization of horses by certain Kikkuli of the land of Mitanni, and in this work are found certain technical terms [*aika-wartanna*, cf. Sanskrit, ekāvartanaṃ 'one turning'; *tera-wartanna*, 'three turnings'; *panza-wartanna*; *satta-wartanna*; *navartanna*; etc. Gurney, O. R., *The Hittites*, Lon., 1954, p. 124], belonging to a language akin to Sanskrit, the ancient speech of the Aryans of Northern India" [*The Hittites*, p. 104-5]. But the Indic dynasts were also diplomats and realists as is evidenced by the facts that they had not brought armies from their homeland for their conquests and were able to raise the forces of indigenous

peoples by persuasive methods; their compromise with the native cults and customs; their appreciation of popular aspirations; their patronage to indigeneous art, culture, and literature, and last but not least their humanitarian approach to the problems. There was much fascination for the hand of the Indic princesses among the local rulers as the Amarna letters inform us. The Mitanni king Artatama gave a daughter in marriage to Tehuti-mes IV (Tuthmosis IV, 1425-1408 BC) in whose reign the Egypt of the New Kingdom reached the zenith of its glory, and the son of the former, Shuttarna II, also married his daughter to Amun-heteb III (Amonhotep III, 1410-1372 BC). The fusion of the Indic blood with the 'divine' Egyptian dynasts seems to had also been planting ideas and ideals in the palaces of the Pharaohs (Egyp. *Per-Aa* - Biblical, Pharaoh), new and novel to the Egyptian tradition, which found their expression in the revolution of Amun-heteb IV (1380-1363 BC) who assumed the new name Khu-en-Aten ('spirit of Aten', an almighty monotheistic Sun-god represented by the solar disc) or Akhnaten, whose grandmother, mother, and wife were all Arya princesses from Mitanni.

112-I. Akhnaten provoked a religious revolution by forsaking the traditional worship of Amun-Re, the presiding god of Thebes, and endeavouring to pursuade his subjects to adore Aten. "Amenophis IV or Akhnaten," states Jacques Pirenne, "founded universal religion imbued with humanitarian and egalitarian ideas formed by the religious conception of the equality of man before God, he completely dissociated himself from nationalism. He himself, moreover, Egyptian on his father's side and Aryan by his mother's ....conceived the world as an entity subject to a single god, by whom all men are equally created. Carrying out the greatest religious revolution ever attempted by a ruler, he abolished the cults of all the gods, to replace them by that of the one god Aten that dispenses to men, by its rays, life and justice. Aten is good. The life created by him is good. Since God loves all men with an equal love, there can be no difference between them. The palace, the administration, are thrown open to men of all conditions.... In order that the love taught by God should reign amongst all men, Amenophis IV wanted to assure peace. He would maintain it at any price, despite the threats that menaced his empire" [*The Tides of History*, Lon., 1962, p. 90]. "He believed in the one and only God Aten", observes D. A. Mackenzy, "the great deity was Father of All Mankind. Aten was revealed in beauty, and his worshippers were required to live beautiful lives - the cultured mind abhorred all that was evil, and sought after, 'things which are most excellent', it shrank from the shedding of blood, it promoted the idea of universal brotherhood. Akhnetan accounted it sinful to shed blood or to take away the life which Aten gave. No sacrifices were offered up in his temples, the fruits alone were laid on the altars" [*Egyptian Myths & Legend*, London, 1917, pp. 329-30]. Here we find indeed the seeds of the ahiṃsā (non-violence) doctrine on the soil of Egypt, centuries before the Upanishads and the precepts of Jainism and Buddhim appear on the Indian scene. Asoka (c. 269-232 BC) of the Mauryan Dynasty (c. 322-184 BC) in India became awakened to ahimsa after killing a hundred thousand human beings in the war of Kalinga (mod. Orrisa). Akhnaten in Misr, on the other hand, had accomplished it twele centuries earlier than Asoka without taking a single life.

113-I. The time of four centuries for the Indic aristocracy of the Kaśśis and three centuries for that (Marianna) of the Mitannis to rule over Western Asia piecefully without popular upsurges against them, as was the case with previous rulers, was indeed an achievement on their part in that troublesome world of the late Bronze Age. But before

decay set in, because of age, in these political institutions, the Indo-European aristocracy of the Anatolian Khattis (Hittites), which though belonged linguistically to the *centum* division, and practised matriarchy like the Egyptians, a non-Indo European trait, had meanwhile succeeded in metallurgy of iron which they guarded as a trade-secret. The Khattis equipped the war-chariot introduced earlier by the Kaśśis and Mitannis with components of iron and mounted iron-tyres on their wheels. This improved chariot, sturdier and more durable, was a challenge to the Kaśśi-Mitanni chariotry and the result was that the Mitannis together with their subject people who called themselves the Aśura after the name of their war-god of the same name who had his temple at the city named Aśur, had to accept the suzerainty of the Khattis under the king Suppiluliumas I (1375-35 BC) ruling from Khattusas (Boghazköy) over Asia Minor. The Aśuras or the Assyrians were great traders. They somehow found out the secret of iron metallurgy. They began to work diligently and in course of time were able to construct armour and war weapons of iron and improved the strudy khatti chariot into an armoured vehicle or tank which was pushed from behind by manual labour in order to demolish fortifications mechanically. Iron was an 'impure' metal to the Kaśśi-Mitanni. It was a taboo to them. They lagged behind and the Assyrians were able to wipe out with a vengeance all the three Indo-European aristocracies from the face of the Middle East during the late thirteenth century BC. This gave the ambitious Aśur people a free hand to build up an empire of their own in Western Asia, an empire characterized by wickedness, bloodshed, torture and such other inhuman acts as we know from the Assyrian inscriptions and literature. However, the Assyrians had their friends also in India. They had matrimonial relations with the Yadu (Yādava) dynasty of Dvārāvati (Dwarka) in western India, as a comparative study of the Puranic story of Ushā-Aniruddha appears to suggest, as we shall see later.

114-I. We have already noted (8-I) that the world of the Middle East was a gradually shrinking world for the agriculturist. Europe was being occupied by advanced peasantry and with the disappearance of the Indo-Europeans from the Middle East at a time when the revolutionary industrial transition from copper to iron was taking place in India and the Western Asia, the focuss of history was shifting towards the Mediterranean. India began to open up the Southeast Asia and the Pacific as we know from the Jātakas and the linguistic evidence [Wallis, W. D., 'Classical and Indo-Iranian Analogies in Southeast Asia and Pacific Islands', *Culture in History*, NY, 1960, pp. 315-32] and spread of Hinduism and Buddhism accelerated the process. Commerce began to grow between the Pacific and the Pillars of Hurcules and the new strategical position of the middlemen which the Middle East acquired, opened up new avenues for the economically-declining Semitic world, now more characteristically symbolised by the camel rather than the cattle. They soon readjusted themselves to the new call of the environment and turned traders, carriers and navigators, an easy and more remunerative change for the shepherd.

115-I. It is not only that the period of the decline of the Indic dynasties in the Middle East from the time of the Khatti king Suppiluliumas I (1375-1335) during the fourteenth century onwards to the twelth century BC, coincides with the appearance of the Rigvedic people in the Indo-Sarasvati plain, but the following factors show the probability of the Vedic culture having been an intrusive element in the animistic continuum represented by the Indus Civilization for its earlier phase and by the Brahmanical Āgamic tradition for later phases in India.

(1) The Vedic religion stands out in contrast to the entire Indian religious system that essentially belongs to the Animistic Horizon { 63-I, 2 } from its beginnings in the pre-Indus Baluchi peasant cultures down to our own times.

(2) The Vedic religion has more in common with the Middle Eastern religion of the Bronze Age. The Vedic sacrificial pattern, the hierarchy of sacrificial priests, the ritual, the mythology, the hymnology, etc., all betray an unmistakable Middle Eastern imprint.

(3) The Middle Eastern religion of the second millenium BC is characterized by the rise of a thunder-cum-war god riding or represented by a bull and wielding thunderbolt.[23] Teshup of the Asianics (Khatti-Mitanni masses), and Adadu (Adad) of the Babylonians and other Semitic peoples play significant role in the Middle Eastern mythology. A comparative study of the characteristies of the Vedic god Indra shows that he was an adaptation of the Middle Eastern storm-god, a combination of a culture-hero Indra with the Asianic Teshub, to whom had been added the Assyrian feature of his constant war with the dragon (Vṛitra of the Vedas). Indra's wars with Vritra and his demolishing the fortified towns (' puras ') of the Asuras and the Dasyus are the reminiscences of a hilly northern Iraq and Kurdistan where the Asuras possessed such settlements. The Mitanni kings who had subjugated the Asuras mention in their inscriptions that they worshipped Teshub also together with Indra. The Vedic Indra represents a stage later than this when Asianic Teshub was fused with the earlier Indra and the evidence indicates a relationship between the Mitannis and the Vedic Āryas.

116-I. The above discussion poses an interesting issue to the modern historiographer. J. H. Steward has formulated five major developmental stages [' Evolution & Process ', *Anthropology Today*, 1953, pp. 313-26] as an alternative to Morgan's familiar scheme (Morgan divided

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23 – " Hadad, a storm god, was connected with no particular city, probably because he had developed out of the old Semitic religion from a spirit of the storm or a weather-god of migrations. When the conquering Babylonians penetrated into the northern mountainous country of Syria, they recognized in those lands of rain and storm-winds the home-country of Adad; and hence he is often called in the inscriptions ' the Amorite god ' [Murphy, J., *The Origin & Hist. of Religions*, 1952, pp. 168-9]. We are justified in speaking of a Hurro-Hittite symbiosis...... { Among them } the bull being the regular companion of Teshub, the Lord of the Storm .. the eastern Hurrites (Khurris), assimilated their own god, Teshub, with the Mesopotamian deity Adad. The Weather god is undoubtedly a synthesis, including in his identy a number of what were once independent gods, for every important Hittite city had a Storm god of its own...... the official attempts at syncretizing the gods did not always take into account genuine differences of function, with the result that the same god may be a storm god in one place and a god of agriculture or of war in another..... About 1600 BC a further complication was added when the Aryan kingdom of Mitanni established itfelf in the Hurri country and the Aryan gods Indra, Mitra, Varuna and the Nāsatya joined the Hurro-Hittite pantheon " [Woolley, L., *Hist. of Mankind*, I, part 2, UNESCO, 1963, pp. 729-30].

all history into three stages of development – savagery, barbarism, and civilization – correlated with economic and social achievements. *Ancient Society*, 1877).

(1) Pre-Agricultural Era–covering the Palaeolithic and the Mesolithic Ages.

(2) Incipient Agricultural Era – the period of horticulture and the beginning of the settled life.

(3) Formative Era of Basic Technologies and Folk Culture–basketry, pottery, weaving and metallurgy.

(4) Era of Regional Development and Florescence–enlargement of irrigation works, theocratic multi-community city-states, large religious edifices and writing.

(5) Era of Cyclical Conquests – strong tendency towards urbanism, large-scale militarism, the extension of political and economic domination over large areas.

The issue posed is, did India ever achieve the developmental stage of the Era of Cyclical Conquests – the climax of Pre-Industrial Civilization-before the advent of the Vedic Āryas on the Sarasvati, as the story of the Indic princes in the Bronze Age Middle East suggests? The statement of the Puranic historiographer that the classical age of the Indian history had ended with the Bhārata War may not perhaps be without a meaning. India had already achieved the Urban Revolution of a level not inferior for its time to that of its Middle Eastern efflorescence by the middle of the third millenium BC, as we know in the light of protohistoric archaeology. There was no anthropo-ecological factor evident to us to retard or suppress the next stage of the process in India, i. e., the Era of Cyclical Conquests. It is in the fitness of things if we find some Indic princes setting out for conquests in the Middle East by the beginning of the second millenium BC with the horse – drawn light chariot as their distinctive war equipment, and appear there as the ruling caste among the indigenous 'Asianic' peoples, known as the Kāśśi and Mitanni. One issue raises another and we are now faced with the dilemma of taking it for granted or not the presence of pre-Vedic Aryans in India, whose language, judging from the names, deities, etc., of the Kāśśi aristocracy occurring in the Babylonian records { 107-I }, appears to be an archaic form of the Old Indo-Aryan language.

THE INTRUSIVE VEDIC PEOPLE AND THEIR INDO-MIDDLE EASTERN CULT.

117-I. Taking into consideration all the aforesaid facts and factors, it appears *prima facie* that the Indo-Aryan aristocratic caste among the Kaśśis (Kassites) of Babylonia and Mitannis (among the Mitannis this caste was known as the Marianna) of Assyria, etc., were originally the Indian princes of the *Rājanya varṇa*. They took with them a large retinue including priests and war – chariots and proceeded across Iran to the hilly areas of the Zagros, around the Van, Kurdistan, Asia Minor, etc., and settled among an indigenous peoples in these lands who are linguistically known as the 'Asianics'. In course of time, or as a matter of policy, they added to their own religion some elements of the Asianic and Semitic religions, maintained their own religion in which the horse cult had developed on Babylonian lines, and must have had with them a good number of their own priests, whose hierarchy inherited a Babylonian pattern as the nature of the Vedic priesthood suggests. The Solar deity was developing into the High god in the pantheon of the Mitanni aristocracy, as it appears to have been the case in the light of Akhnaten's revolution in Egypt.

They began to return to India apparently since they lost their hold over the Middle Eastern politics to the Khattis of Asia Minor, and the process came to an end on their final defeat at the hand of the Aśuras or the Assyrians. This was the only popular upsurge against them to which they were succumbed. They, together with their priesthood, found on their return to India mainly in the Sarasvati basin, an area of the least resistence, and they settled and remained there, together with their alien cult, *varṇa* hierarchy, etc., comparatively away from the main stream and scene of the Indian Civilization which had meanwhile shifted to the Gangetic plain. The Rigvedic hymns reflect a state of a relative isolation in which the Vedic people had fresh in their mind the bitter reminiscences of their conflicts with the 'Asuras'. After some time when the Vedic Old Indo-Aryan language acquired some Dravidian phonological traits, seismic disturbances brought about some important hydrographic changes in the Indo-Sarasvati basin and on the Western littoral {6, 8-I}. They raised up the bed of the Ranns of Kachchha, the sea from there was withdrawn southwards for a distance of about two hundred miles and loss of moisture thereby to Sind and Rajasthan became one of the prime factors to give rise to the desiccation in the Indo-Sarasvati basin. The Sarasvati dried up, the Yamuna turned towards the Ganga, and the Rigvedic community shifted eastward to the area of the Indo-Gangetic divide, known as Kuru where the Vedic priests received the patronage of the Kuru prince Janmejaya III, some years after the Mahābhārata War. The Vedas were edited by Krishṇa Dvaipāyana Vyāsa under the patronage of Janmejaya III, and the Puranas were recast so as to conform to the Vedic sacrificial cult under the patronage of Adhisimakṛishṇa, who was fourth from the former in the line of the Kurus of Hastinapur. The cult was later submerged into the sophisticated animistic continuum of India, but the transitional stage was very eventful, to the extent that the earlier religious tradition of India (Āgamic) had to acknowledge a nominal superiority of the Vedic cult.

118-I. In the third stage the post-Rigvedic Sarasvati was relatively a dried up river. The camel in India became a useful animal with the commencement of the formation of the desert of Thaḷ (Thar), where the great Sarasvati flowed previously. Its dry bed now became the main artery of land traffic between the marts of northern India and the ports of western India, namely, Bharukachchha, S'ūrparaka, etc., which traded with the Western World. We may incidentally mention here that the Extra-Peninsular passes {37-I} were not the only doors of entry into India. The Rigveda alludes [Rv. IV, 8, 9, 7] to the arrival of the Yadu people by the sea. There were other peoples who have landed at various ports on the West Coast situated as far south as the tip of the peninsula at Kumāri Kanyā. They were rehabilitated in the Konkan, Malabar and Kerala as we know from the story of Paraśurāma. In the Indian tradition this cult-hero is associated with the colonization of the West Coast by the Western people. Agatsya is connected with the settling of the people of the Western tradition in the trans-Vindhyan Peninsular India and the Far East. Bhagiratha is stated to have led these Western people into the Gangetic valley. It is what the ancient Indian tradition states and a reference to them here does not mean that we assign some historicity to these events. It may further be mentioned incidentally that the Yadu, Puru, Anu, Druhu, and the Turvaśa, who are believed to have formed the Vedic *pancha-janah* or the Five Peoples, appear to have come from the Middle East. Out of these five names, the four end with the Akkadian termination —u and the people bearing them may well have hailed from among the Kaśśi aristocracy of Babylonia where the Akkadian language was spoken. It is significant that the name Turvaśa does not follow this rule. In the Hittite texts of the thirteenth century BC a term pronounced as

'Tarūwiśa' and 'Tarowiśa' occurs which is understood to stand for the city of Troy [Gurney, O. R., *The Hittites*, 1954, pp. 56–7] and the Rigvedic term Turvaśa might stand for the Trojans.

THE ĀGAMA AND NIGAMA TRADITIONS OF ANCIENT INDIA

119–I. The conspicuous change that the intrusive Vedic community underwent in the course of its eastward shift as a result of the recurred physical changes in the Sarasvati basin some time between 1400 and 1200 BC (we are going to discuss this chronological issue elsewhere) was that the conditions encountered in the changing environment compelled this community having a tripartite (the priest, the warrior-ruler, and the cultivator-herder called the 'vaiśya' {104–I, 3}, comprising the Ārya community) social set up, to add to itself a fourth *varṇa* named the 'śūdra', after the name of a fishing-cultivating indigenous tribe whom they first met on their eastward movement. The area to which the Rigvedic people shifted was known as Kuru that occupied the territory lying between the upper Sarasvati plain and the Ganga. It was traversed by the Yamuna and Hastinapur was its capital. To the west of Kuru lay the Jāngala, the deserted area of the middle Sarasvati basin, now known as Būgaḍ forming largely the Gangānagar District of Rajasthan. To the east of Kuru stretched the Pānchāl territory of which Ahichchhatrā was the capital. We have already discussed various factors connected with the agricultural geography of the area roundabout Hastinapur, or the upper Doab {51, 54–I}. It was an area of paddy-cultivation. Inspite of the fact that the cultivation of barley was possible in restricted conditions in the Doab or Kuru-Pānchāl-Vatsa territory, the Vedic community *en masse* must have felt helpless as the wet-paddy cultivation demanded a different sort of farming technology. As a solution to it the intrusive Rigvedic community claiming superiority in various ways offered to oblige the indigenous paddy-farmers, who may have been the ancestors of the Kurmi-Kunbi-Kuṭumbi complex of the Indian cultivator, by accepting them into their fold under the new varṇa of the S'udras. As a primary result of this event the *vaiśya* whose duty was the production of food and herding in the Rigvedic community, was relieved of this burden and in his turn he himself was changed into a burden to the new cultivating class of the S'udras, together with the priest and the warrior-ruler varṇas. The Matsya-purāṇa, 163, 3, mentions that the Vaiśyas were devoted to agriculture in the Kṛita Age. So they passed 'their' Kṛita Age and 'entered the Tretā' profitably in order to turn into the capitalistic class of India during the Kali Age. The Vaiśya food-producer had to support two classes, and now the new food-producer, the S'udra, had to bear the burden of three non-productive classes. The burden was increased, but the higher yields of paddy per acre in comparison to wheat-barley {Fn. 5, p. 8} maintained an economic equilibrium. The next technological issue was the adoption of iron which was a taboo to these people as we have seen {113–I}, and this was the main reason of their defeat by the Assyrians. The indigenous iron-workers were therefore also taken into the fold as the S'udras, and so were taken many others enumerated in the Yajur-veda, XXX. The human process in India, it may be mentioned here, was embarking upon, with these events, to undergo a sociomorphological change, unique in the human history. It had to face the issue of a social readjustment of fast increasing and immigrating populations in all the socio-economic states, viz., the food-gathering, the horticulture, the agriculture and the pastoralism. It was a busy time for both the priest and the bard and they did their job well.

120–I. An important process becomes discernible on our study of the expansion of the Vedic Aryans into the Gangetic basin. This was not, as a matter fact, the first entry of

the Aryans into India as is currently held. We have already discussed the presence of an Ārya stock in India speaking an archaic form of the Old Indo Aryan from which the aristocracies of the Kassi-Mitanni were branched off some time after 2000 BC of { 108-I }. They were the peasant villagers of the Indo-Sarasvati basin when the Sarasvati was in its first stage { 105-I }, and were responsible for the development of the two earlier protohistoric urban developments in India, namely, the Indus Civilization and the Peninsular Protohistoric Civilization { 87-I }, which were in their heyday between 2300 and 1700 BC. These speakers of an archaic Old Indo-Aryan shifted later to the Gangetic basin, where they were already present when the Rigvedic community entered the Doab. If the PGW at Hastinapur belongs to the Vedic Aryans, there exists an earlier archaeological stratum, Hastinapur I, characterized by an ochre-washed pottery, which may well have been associated with a variant of the Peninsular Protohistoric Civilization connected with the chalcolithic townships at Nāgda, Eran, Maheshwar, Prakāshā, etc. { 83-I }. The S'udras seem to have been enlisted from this pre-Vedic Indo-Aryan stock of the Gangetic valley. The synthesis between the two communities is reflected by the Old Indo-Aryan literature. In the Tenth *manḍala* (Book) of the Rigveda which is linguistically later than the main bulk of the Rigveda, we notice the beginnings of a compromise between the two communities. The acceptance of certain Puranic rulers, for instance, Prithi Vainya [Rv. X, 148], who is said to have introduced the plough agriculture according to the Purāṇas; S'aryāti [Rv. X, 92], a son of Vaivasvat Manu, the progenitor of the earliest Puranic ruling dynasties after the Flood, who ruled in Ānartta or modern Gujarat; Māndhātā [Rv. X, 134] whose son Muchukunda became the ruler of Māhishmati (mod. Maheshwar) on the Narmada, and others of the Puranic tradition, as the 'seers' of the Vedic hymns, on the part of the Rigvedic community is noteworthy in this respect. The dynastic accounts of the kings of the pre-Vedic Indo-Aryan society of the Gangetic valley is found in the Fifth Book or Vaṃsānucharita of the Puranic historical tradition that go about 95 reigns before the time of Janmejaya III, in whose time the Vedas were commited to their extant form { 117-I }, during probably the twelth century BC, as we shall discus later, or 133 reigns before Chandragupta Maurya, a late contemporary of Alexander the Great (336 – 323 BC). In both the cases the antiquity of the pre-Vedic Indo – Aryans of the Gangetic basin, whom the auther is inclined to associate with the two Indian urban developments of the Bronze Age, as we shall see elsewhere, goes back to the third millenium BC.

121-I. The two traditions are known as the Āgama and the Nigama (Vedic). The process of the fusion between the earlier Āgamic tradition which had a sophisticated cult of the Animistic Horizon of religion, and the Nigamic tradition of the Vedic people that had a cult of the Agricultural Horizon consisting mainly of the worship of anthropomorphized forces of nature, becomes more and more evident as we proceed from the Tenth Book of the Rigveda, through the later Vedic *saṃhitas* and *Brāhmaṇa* ritualistic and philosophical manuals, to the pre-Buddhistic works called the *Upanishads*. The state of society and philosophy that we notice in the *Upanishads* is not a natural development of the Vedic institution as is generally held, for the religion of the Agricultural Horizon does not develop into that of the Animistic Horizon. It is a case of the reversal of the process in which we find animism triumphing over naturalism, i.e., the Āgamic tradition assimilating the Nigamic one, but under the seal of the latter or Vedic. The Vedic or Nigamic institution was Aryo-Middle Eastern in nature, but at the same time, the Āgamic one of the pre-Vedic Indo-Aryans of the Gangetic

valley also displays strong Middle Eastern influences both Semitic and Egyptian, belonging to an age and stage earlier than of the former.

ADVENT OF THE INNER ASIAN PASTORAL TRIBES : THEIR ASSIMILATION INTO THE INDIAN SOCIETY

122–I. During the third stage, the Sarasvati basin began to deteriorate from a savannah into steppes or grasslands as a result of the above-mentioned second catastrophe in which overgrazing, deforestation and other human agencies during the Rigvedic times must also have played some destructive role. The disaster was followed by a 'Twele Years Drought' according to the Mahābhārata, S'alya p., XLVIII. All these factors, together with an effect of the Afrasian Desiccation to which India stood marginal, appear to have been responsible for the general reduction of the rainfall conditions in India by 10°—15° { 89–I }. The Sarasvati basin now began to play a third role in its third physical state in the human process. It was the rehabilitation of the Sun-worshipping Inner Asian pastoral tribes (the Ābhiras, the Yaudheyas, the S'akas, the Kushāṇas, the Hūṇas, the Gurjaras, the Bhāṭis, the Jāṭs, the Rabāris, etc.), who were linguistically still Indo-Europeans for the advancing dessication had not yet compelled the Mongol and Turkish tribes to occupy their habitat. Some climatic crisis in the Inner Asia in which human element had also played a role, began to expel these Indo-European herding tribes in search of new pastures both in Europe and Asia, and it was well in time for their relief, that the Sarasvati basin was now turning into a rich grassland, otherwise these nomadic hordes would have played a devastating role in the civilized areas of Asia, as they did in Europe and the later Mongol tribes did in Asia. They began to enter the Sarasvati basin one after the other peacefully. Their problem was mainly economic. They wanted a permanent home in India and that, too, with honour. The priest and the bard had now a trade of the highest dividends. Formulae for the status and origin of various castes and tribes were prescribed and codified in the *Dharmaśāstras*, such as we find in the Manusmiti, a work that follows the tradition of the Babylonian Code of Khammurabi (1792 – 1750 BC). One after the other these north Iranian and Inner Asian pastoral tribes were entering the Dharma fold and were receiving the status of the warrior-ruling varna of the Kshatriyas or the Rigvedic Rājanyas.

THE RISE OF INDIAN FEUDALISM : ITS ORIENTATION TO ART AND LITERATURE.

123–I. The pastoral peoples cultivate during the winter when they are at home. The coming of the summer sets them on migrations with their herds and in doing so they traverse submontane areas and hill flanks which are rich in pasture because they are unsuitable for cultivation. The present pastoral tribes of Bāgaḍ and Mārwāḍ wander as far south as Mālwā through Shekhāvāṭi, Dhun Ḍhār, and Jhālāwāḍ tracts of Rājasthān. Those of Māḍ (Jaisalmer) proceed to Gujarāt and thence follow the flanks of the Vindhyas and the Satpuras. Reaching in the time of scarcity as far east as Bundelkhand and Chhattisgarh in the middle India. Towards north the transhumance activities of these cattle-breeders extend to the Siwaliks, Himāchal Pradesh, Kumaon, Nepāl, etc. Their outward journey ends where they meet the first showers of the monsoon. They then turn their faces and return home well in time for their small winter farming. These peoples spoke mainly *apabhraṃśas*. In the course of their annual seasonal movements the pastoral peoples came in more contact of the horticul-

tural hill – tribes belonging to the matriarchal Eastern Society { 41, 42, 85–I } than of the inhabitants of plains in those times. A process of fusion between the pastorals and horticulturist hill-tribes was a natural corollary. The apabhraṃśas began to influence strongly the linguistic aspect of these hill-tribes and in course of time many a tribes adopted the Indo-Aryan languages. In the beginning, the pastoral peoples formed *gaṇa* states, and as time passed on, feudalism developed among them and they were settled as rulers among the horticulturist hill-tribes in the hilly areas of Kashmir, Himāchal Pradesh, Nepal, Sikkim, Bhuṭān, Assam, Orissa, Chhattisgarh, Bundelkhand, Malwa, Gujarat, and Rajasthan. The right of the headmen of various tribals to the coronation of a number of Rajput states is suggestive in this respect. The advent and the assimilation of the north Iranian and the Inner Asian Indo-European pastoral tribes reflect in the human process in India in various ways. It marks a change in the post-Gupta art, such as, the sculpture, painting, as well as dress and ornaments. The distribution of the Dardic languages (Kāfiri group, Shina, Kohistani, Kashmiri, etc.), the Gypsy speech and its argots, the various apabhraṃśas spoken formerly, and the present dissemination and development of the Pahāḍī (Gurkhāli or Nepali, Khas, Gūjari, Labhāni, Kumāyuni, Gaḍhwāli, etc.), the Rajasthani including the Māḷwi, Nimāḍī, etc., the Gujarati including the Bhili, Vāgaḍī, Ahirāṇī, etc., and a few stray dialects, have resulted from the movements and settlements of these pastoral tribes in India.

124-I. We have noticed the two events on the Sarasvati during its third stage; viz., (1) the migration of the agriculturist (the Rigvedic community) people to the east on account of a hydrographic changes that began to turn its basin into steppes and thus more suitable to cattle-herding, and (2) the rehabilitation of the north Iranian and the Inner Asian Indo-European pastoral tribes. The third event was that it became more sacred in the eyes of the people after its drying up, just in the manner the earlier habitats and events leave a sweet memory and this emotion ultimately crystallizes into a feeling of sanctity towards them. This mentality is found generally among all the primitive and other communities. The banks of the Sarasvati, which still had water here and there and there were still earlier lakes on its bed though now shrinking gradually, became more sacred than they were during its second stage when the Vedic people were living on the river. A number of hermitages where higher education was imparted, discussions on philosophy, tradition, grammar, etc., were held, literature on them prepared, and great sacrifices were held, became established. These two states reflect from the contents of the Rigveda and the Mahabharata. The Vedic literature belongs to the second stage of the Sarasvati, and the reminiscences it contains of a past, are connected with Kurdistan and Assyria of the middle Bronge Age. We can hardly expect from the Rigveda anything substantial throwing light on the events of the first stage of the Sarasvati, when the two basic farming communities of the Old World were fusing together { 106-I }. Nevertheless, there is a little ray of hope. The Puranic literature and the Epics professe to contain a dynastic history of India before the Mahabharata War, the period thereof followed soon that of the passing of the Sarasvati from its second to the third stage, which might contain something substantial in this respect. The main defect of the Puranas is that the pre-Mahabharata (and therefore pre-Vedic in a meaning) dynastic and other accounts they contain in the name of actual events, have come down to us in a form both linguistic and otherwise that they have received their extant form during the earlier centuries of the first millenium AD. In spite of all the developments that one notices in their sectarian contents, a distinguishing feature of the Puranic Book of the Vaṃśānucharita

or 'dynastic account', is that it preserves the sequence of pedegrees. The Puranic lists distinguish themselves between the Dynasties of the Kali (Age setting in soon after the Mahabharata War according to their own contents) on one hand, and the preceding dynasties, on the other. Let us see in terms of their successions, without first entering into the details of the validity they may carry for historiographic purposes, if any rulers or dynasties of the latter catagory, had ever remained connected with the Sarasvati basin, according to the contents of the Puranas. The following is a succession of such events which we are giving in terms of the royal pedegrees from Adhisima-Krishṇa of G. R. Pillai's list [Traditional History of India, 1960, pp. 301–8] backwards, who is the last ruler of the pre-Kali Age dynastic lists of the Puranas we find generally under the Book of Vaṃśanucharita.

THE SARASVATI IN THE PURANAS AND EPICS

Pedegrees before Adhisimakṛishṇa	The Sarasvati
125–1. ——	Holy river, sacred to *pitṛis* (manes), flows from the Hemakūṭa-*parvata* (mountain) [*Matsya* p. VII, 3; XXII, 23], sacred to Devamātā (Mother-goddess) in the chariot of Tripurāri [*Mts*-p. XIII, 44; CXIV, 20; CXXXIII, 24].
Before Flood ..	At its source Pṛithu Vainya performed horse-sacrifices [*Bhāgavat*, IV, 14, 36; XVI, 24].
98	Ikshavāku: foundation of the cities of Ayodhya and Pratishṭhāna in the Gangetic basin.
97	Pururavas found Urvaśī on the Sarasvati [*Bhg.*, I, 4, 15; IV, 10, 1; V, 19, 18, etc.]
94	Yayāti extended his kingdom from Pratishṭhān, near Allahabad, to the Sarasvati [*AIHT*, p. 258].
90	S'rāvasta: S'rāvasti was founded in the Gangetic valley.
88	Kuvalāśva, *alias*, 'Dhundhumāra' ('killer of Dhundhu'). "There is some suggestion", writes Pargiter, "that the southern part of Rajputana desert was still a very shallow sea in those times, for Kuvālaśva is said to have killed a Rākshasas, Daitya or Asura, Dhundhu, near a sand-filled sea called Ujjālaka in the desert plains. Again Viśvāmitra performed austerities and attained brāhmaṇhood at Rushangus *tirtha* (sacred place) on the river Sarasvati, in lowlands near the sea. The Sarasvati would have flowed into that sea." [*AIHT*, p. 260].
81	Matināra: performed a sacrifice lasting for twele years on the Sarasvati.
79	Māndhātṛ or Māndhātā of Ayodhya. His sons carried their arms south to the river Narmada. **Twele years drought** occurred in his reign.
78	Purukutsa, son of Mandhata. The Karkoṭaka Nāgas induced him through the river's mediation to destroy the Mauneya Gandhārvas, who had despoiled them [*AIHT*, p. 262]. Māhishmati was founded on the Narmada. The Haihayas of the Narmada valley grew in power, and comprised

five leading groups, the Vitihotras, the Śāryātas (Gujarat), and Bhojas, the Avantis (Māḷwā), and the Tuṇḍikeras (Tapti). Their dominion stretched from the Gulf of Cambay to the Doab and thence to Benares [AIHT. P. 267].

64 .. .. .. Satyavrata Triśanku: **Twele years drought occurred** [Vāyu-p., CXXXVIII, 86].

59 .. .. .. Sagar: A Yādava branch was founded on the Chambal [*Ibid*, p. 272].

57 .. .. .. Duṣyanta, a Paurava: after Sagara's death he recovered his lost territories: his son was Bharata. The territory of Bharata appears to have shifted to the upper Doab, for Pratishṭhāna is no longer mentioned, and stretched from the Ganga to the Sarasvati [*Ibid*, p. 272-3]. Some passages make Hastinapur the capital of Dushyanta and Bharata [Mbh. I, 74, 3000].

55 .. .. .. Bhagiratha of Ayodhya: opened up the lower Gangetic basin: the Gangetic delta was further north of its present position.

47 .. .. .. Sudās of Ayodhya.

40 .. .. .. Dilipa II – Khaṭavāṅga of Ayodhyā.

38 .. .. .. Raghu of Ayodhyā.

36 .. .. .. Daśaratha of Ayodhyā.

35 .. .. .. Rāma of Ayodhya.

During the reign of Rāma, the sea withdrew itself and desert was formed as the Rāmāyaṇa of Vālmiki, Yuddha Kāṇḍa, 20-22, informs us, when he was marching to Lanka with his army. That the sea gave him passage and a bridge was constructed is a well-known incident of the life of this Indian hero. "It is from contempt that the Ocean does not appear to me in person" said Rama, "I shall wipe out that Ocean, the Abode of Varuṇa (the Indian god of water, sea and the western quarter of the earth) ..thereafter, fixing an arrow on his excellent bow, Rāghava (Desendent of Raghu, i.e., Rama) stretched that weapon, and heaven and earth seemed to be riven, as it were, and the mountain trembled.... tremours ran through the lakes and rivers....breaking off thereafter the Ocean with its mass of water, serpents and demons surged beyond its confines....the Ocean himself rose out of the waves, resembling the Himavat (Himālaya) Mountain, he was encircled by the clouds and winds, while the rivers Ganga and Sindhu were his escorts, said.. 'O Beloved Rāghava !....I will make it possible for thee to cross over..' On this, Rāma said to him, Hear me a refuge of Varuṇa ! This arrow of mine must accomplish its intended end ! where shall I let this mighty arrow fall ?' The Ocean replied, 'To the north of this place is a sacred

reigon, Druma Kulya, where robbers, having the Abhiras as their chief, drink my waters. The vicinity of those perverse beings is intolerable to me; it is there, O Rāma, that thou shouldst loose thy shaft.' Thus spoke the Ocean and Rāma, in accord whith his wish, let fly that marvellous dart in his presence. And the place, were that arrow resembling a flash of lightning fell, is known in the world as the Desert of Maru. As the arrow fell, it created a thunderous sound and the deep crater which is known as Vraṇa was filled with the water of the deeper springs. This place became known as Marukāntāra. Thereafter Rāma, the son of Daśaratha, having dried up the waters of the Ocean, conferred a boon, saying, 'This place shall be rich in pasturage and free from desease; it will abound in fruit, roots, honey, ghee and milk'. In this way the Desert of the Maru came to possess these manifold features and by the grace of Rama's liberality, assumed a pleasant aspect." [*Ramayana of Valmiki*, III, tr., Shastri, H. P., Lon., 1959, pp. 48–53].

29 .. .. .. Kuru : he gave his name Kuru to the area lying between the Ganga and the Sarasvati [Vishṇu p., IV, 20].

26 .. .. .. Janamejaya II : he hurt the son of Gārga and iron ('loha') began to smell from his body and was therefore abandoned by the people. Indra took away from him the divine chariot of Yayāti on occount of this 'non-Aryan' act : he fell at the feet of sage Indrota, performed for him a sacrifice [Vāyu p. XCIII, 18–27]. Janamejaya was relieved of the smell after a ritual bath.

10 .. .. .. S'antanu : as is elder brother Devāpi adopted forest life, he became king "In the kingdom of S'antanu there was **no rain for twele years**. Apprehensive that the country would become desert, the king assembled the Brāhmaṇas, and asked them why no rain fell. They told that his elder brother Devāpi had declined from the path of righteousness and therefore the rain had not fallen. When the Brāhmaṇas arrived at the hermitage of Devāpi, they informed him, that, according to the doctrines of the Vedas, succession to a kingdom was the right of the elder brother, but Devāpi entered into arguments, which had a defect of being contrary to the precepts of the Vedas. The Brahmanas then turned to S'antanu and said, 'Devāpi is fallen from his state, for he has uttered works of disrespect to the authority of the eternal and uncreated Veda; and when elder brother is degraded, there is no sin in the prior espousals of his junior. As Devāpi being degraded from his caste by repeating doctrines contrary to the Vedas, Indra poured down abundant rain, which was followed by plentiful harvests" [Vishnu-purāna, IV, 20 tr., Wilson, H. H., Cal., 1961., p. 366].

6 .. .. .. Duryodhana ruling at Hastinapur and Yudhishṭhira at Indraprastha (Indarpat at Delhi) in the Kuru territory. This was the period of the heroes

of the Mahābhārata War.[24] We have already noticed some events and places that occurred on the Sarasvati (99, 100-I) according to the Mahābhārata. These accounts reflect the conditions that followed the second catastrophe (118-I), which seems to have taken place before S'antanu's reign. The Sarasvati of this period finds some description in the Vana-parva and the S'alya-parva of this epic (generally known as the Great Epic).

The Pandavas crossed it while departing for residing in the forest [*Mhb.* Vana-p., 5. 2]. Krishṇa (he ruled at Dvārāvati or Dwarka in Gujarat and was a friend, philosopher and companion of the Pāṇḍavas, a rival party in the Mahabharata War) refers to various sacrifices performed on it [*Ibid*, 12. 14]. Kāmyaka-vana (forest) was located on it and the hermitage of Dadhicha was on its other side [*Ibid*, 14. 66; 100. 10]. Lomaśa describes the religious virtues one acquires from it [129. 20-I]. It disappears at Vinaśana and reappears at Chamsodbheda [130. 3-5]. Enumerated among the rivers that gave birth to the Fire [222. 22]. As one of the branches of the Ganga [*Mhb*, Bhishma-p. 9. 14]. Sixteen thousand wives of Krishṇa jumped into its waters after the death of their husband [*Mhb*, Svargārohaṇa-p. 5. 25]. Arjuna (a leading Pāṇḍava hero of the Mahabhārata, who was intimate with Krishṇa) appointed the son

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24 - S'antanu had a son named Bhishma. Parāśara, a leading Vedic sage, fell in love with a fisherwoman named Kāli while crossing the Yamuna in a ferry boat. She gave brith to a dark-complexioned (kṛishṇa) son in an island (dvipa) in the Yamuna, hence was called Krishna Dvaipāyana Vyāsa ('reciter'). After some time the king S'antanu too fell in love with Kali. She married S'antanu on the condition that her sons would succeed him on the throne. Bhishma, the rightful heir declared that he would not claim the throne. Kali thus became the queen of the Kurus and assumed the name Satyavati. She gave birth to two sons, Chitrangada and Vichitravirya, who died issueless. According to the niyoga (a form of levirate) custom prevalent among the Kurus, which was peculiar to the Inner Asian pastoral tribes, Krishna Dvaipāyana Vyāsa, who was a brother of these deceased Kuru princes from the srme mother but from a separate father, was called upon to beget the heir to the kingdom on the three widow queens of Vichitravirya, who were sisters, and whose names Ambā, Ambikā and Ambalikā suggest that they belonged to a non-Vedic religion. As a result of this form of levirate, Dhritarāshṭra, Pāṇḍu, and the sage Vidura were born. The first and second were the fathers of the Kaurava and the Pāndava brothers, the two rival parties in the Mahabharata war, who had thus in their veins a mixture of the Vedic, the Austric, the pre-Vedic Aryan, and the Inner Asian pastoral blood. Krishna Dvaipayana Vyasa, a hybrid between an Austric woman and a Vedic Aryan father, is the rightful claimant of having made the greatest cultural contribution to the Indian civilization of all times by the great synthesis he has brought about between the Agamic and Naigamic traditions of India and as the editor and the compilor of the four Vedas, the Eighteen Puranas and the Great Epic the Mahabharata.

of Sātyaki as the governor of the area lying on the Sarasvati [*Mhb.*, Mausala-p., 8, 71]; Baladeva, Krishna's elder brother, performed a sojourn of the Sarasvati from its mouth to the source [*Mhb.*, S'alya-p. XXXV–LIV].

All that is contained in the Mahabharata has not come down to us in a contemporary language, which may well have approximated the Old Indo-Aryan of the later Vedic period. "The final phase of the epic (Mahabharata), between the 2nd cent BC and the 2nd cent AD, was the result of the retouching and re-editing of the Bhārata by Brahmanic redactors" [Dandekar, R. N. 'Indian Epic Literature', *Encyclopedia of Literature*, ed., Shipley, J. T., NY, 1946, p. 447.] "If there is any single literary work of India's antiquity whose tradition continues to live in various aspects of Indian life, it is the Mahabharata. The Vedic gods are now no longer worshipped, the Vedic ritual is now well-nigh extinct.... The lays and legends relating to heroic deeds of the Bhāratas....adopted from the floating mass of the ancient *itihāsa-purāṇa* literature, grew into the *Jaya*, the first phase of the Mahabhārata. It crystallized while the last phase of the Vedas, the *sutras*, and the early Buddhistic literature were being produced" [Dandekar, R. N., *ibid*, p. 446]. Despite all these facts, the accounts of the epic appear to have a kernel of truth in them as we can say on correlating them with palaeogeoraphical, ethnological and socio-economic facts and factors. The Mahabhārata reached the Southeast Asia, together with the introduction of the Western type of Urban Revolution, where its influence on the life and institutions still persists.

The picture of the course of the Sarasvati we find in the contents of the Mahabharata is that it arose at the Plakshaprasravaṇa [*Mhb.*, S'alya, LIV, II] in the Himalayas (it shows that the river derived its water from a galacier) and met the ocean at Prabhas [*Mhb*, S'alya, XXXV] in Surāshṭra (Saurashtra or Kathiawar peninsula in the western India, a part of Gujarat). In the course of his sojourn of the course of the Sarasvati from the mouth to the source, Baladeva passed through the following sacred places [*Mhb*, S'alya, XXXV – LIV]:–

(1) Prabhās : mod. Prabhās Pāṭaṇ near Veraval in Gujarat, famous for its *jyotirlinga*, Somnāth.

(2) Chamsodbheda : here the river is invisible : it is situated in Surāshṭra [*Mhb*, Vana-p, LXXXII, 20, 112; S'alya, XXXV, 87].

(3) Udapān : the river is invisible.

(4) Vinaśana : here the river 'becomes invisible in consequence of her contempt for S'udras and Abhiras' [Mhb, S'al., XXXVII]. 'Here is the beautiful and sacred river, Sarasvati, full of water; and here

is the place known as Vina ana,[25] where the Saraswati disappears. Here is the gate of the kingdom of the Nishādas, and it is from hatred to them that the Sarasvati entered into the earth, in order that the Nishādas might not see her. Here too is the sacred region of Chamashodbheda where the Sarasvati once more becomes visible to men. And here she is joined by other sacred rivers running seawards' [*Mhb*. Vana, CXXX].

(5) Subhūmika : on the bank of the flowing river : Devas, Gandharvas and Rākshasas were to be seen here.

(6) Gandharva-tirtha.

(7) Gargasrota.

(8) S'ankha-tirtha : inhabited by the Yakshas, the Vidyādharas, the Rākshasas, the Pisāchas, the Siddhas, etc.

(9) Dwaita lake.

(10) Nāgadhanvana ('the Desert of the Nāgas') : here the river turned to the east (as a man travelling along its course from the mouth to the source may conceive).

(11) Naimisha forest : "In the Kṛita age the asectics dwelling here were engaged in a grand sacrifice of twele years : the tirthas on the southern bank all looked like towns and cities : the ascetics took up their abode on the river bank up to Samantapanchaka (an earlier name of 'Kuru-kshetra' or 'Kuru's fields') the whole region seemed to resound with the loud Vedic recitations the Vālikhillyas... the Aśmakuṭṭas ('stone-flakers'), the Danto-lakhalinas, the Samprakshanas, etc., all came to that spot on the Sarasvati and made that foremost of rivers exceedingly beautiful like the heavenly Mandākini. Hundreds upon hundreds of *Rishis* came thither.....failed to find sufficient room on the banks of the Sarasvati. For their sake, the Sarasvati, once more flowed in a westerly direction. ...there, in Kurukshetra bathing in tirthas.... Vala repaired to Sapta-Sārasvata.

25 – Vi-naśana ('disappearance') or Adarśana had for long been a very important place on the Sarasvati. In the Vedic literature it finds mention in the later works, for instance, in the *Panchaviṃśa* Brāhmaṇa, XXV. 10, 6; the *Jaiminiya Upanishad Brāhmaṇa*, IV, 26; the *Kātyāyana S'rauta Sūtra*, XXIV, 5, 39; *Lāṭyāyana S'rauta Sutra*, X, 15, 1; *Baudhāyana Dharma S tra*, 1, 1, 2, 12; etc. Baudhāyana states [XVIII, 26; XVIII, 38] that the country lying to the east of this place, to the west of Kālakavana (Prayāga according to the *Manusmriti*, II, 22–3; Sircar, D. C., *Studies in the Geography of Ancient & Medieval India*, Del., 1960, p. 172), to the south of the Himalayas, and to the north of the Pāriyātra (the Aravalli - Vindhyan arc) is called Āryāvartta. This was the state of affairs after the *Brāhmaṇas* and prior to the Buddha (6th cent. BC). The latest reperence to Visa-sana, as marking a boundary, occurs in the *Kāvya-mīmāṃsā* [Gaekwar's Oriental Series, 1934, p. 94] of Rāja'ekhara (9–10 C. AD).

(12) Sapta-Sārasvata: Numerous feathery creatures have their home there: abounded with Vadari, Inguda, Plaksha, Asvattha, Palāśa, Karira, Pilu, etc., grow on the Sarasvati: was resorted to by diverse tribes of ascetics, the Vaneyas: Mankaṇaka performed penances [*Mhb.* S'alya, XXXVIII, 115-6] .... " the seven Sarasvatis cover this Universe { names and details 96-I }.

(13) Mankaṇak Hermitage.

(14) Uśanas or Kapālamochana-tirtha.

(15) Rushangu's Hermitage: here the kings Viśvāmitra, Sindhudvipa and Devāpi { 125-I, 10 } attained Brāhmaṇahood (priesthood)

(16) Pṛithudaka: [26] "One should next proceed to Pṛithudaka, belonging to Kārtikeya. The learned have said that Kurukshetra is holy; that holier than Kurukshetra is Sārasvati; that holier than the Sarasvati are all the tirthas together and that holier than all the tirthas together is Prithudaka" [*Mhb.* Vana, L XXXIII]. According to the Vana-p., LXXXIII, the confluence of the Aruṇā with the Sarasvati was near this place.

(17) Ārshṭisheṇa Hermitage: Here in the Krita age the kings Viśvāmitra, Sindhudvipa and Devāpi (S'antanu's brother) attained Brāhmaṇahood.

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26 – On Baladeva's sojourn Prithuka, modern Pehowa or Pehoa (a railway station on Kurukshetra – Narwana line of N. Rly.) is the second identifiable place after Prabhās. "It lies in Kurukshetra, and its name is a corruption of the Sanskrit Prithudaka, the 'Pool of Prithu', the son of Rājā Vena. Two inscriptions dating from the end of the ninth century AD, found at Pehowa, show that it was then included in the dominions of Bhoja and Mahendrapāla (of Pratihāra dynasty) of Kanauj [*Ep. Ind.*, I, 184, dated = 882 AD; mentions that the management of certain charities, made by horse-dealers in Prithudaka was entrusted to *Goshthikas* or temple-committees]. The more important inscription records the erection of a triple temple to Vishnu by a Tomar family (it contains the earliest reference to the Tomaras of Delhi, c. 735 — 1150 AD, stating that Gogga and his two step-brothers, Pūrṇarāja and Devarāja, built at Prithudaka on the Prāchi Sarasvati, three temples of Vishnu, during the reign of Mahendrapāla I, c. 890-910 AD. *EI*, I, 184, the Tomaras ruled 'Hariāṇā' country from their capital 'Dhillikā' or mod. Delhi); but no traces of ancient buildinings remain, the modern shrines having been erected within the last century. After the rise of the Sikhs Pehowa came under the Bhais of Kaithal (anc., Kapisthala). It is still a place of pilgrimage, and close to it are the temples of Prithudakeshwar, built by the Marāṭhās during their supremacy in honour of the goddess Saraswati and Swāmi Kārtik (Karttikeya, or Kumāra, a son of Siva, a war-god, now more popular in the south India, being known as Subrahmaṇyam). The latter is said to have been originally founded before the Mahabharata war." [*IG*, XX, 1908, p. 100].

(18) Dalvya – vaka Hermitage : "Dalvya – vaka poured the kigdom of Dhritarāshtra, son of Vichitravirya, as a libation. In the former times, the Rishis (the Vedic priests in contrast to the Munis, the Siddhas, the Yatis, etc.), residing in the Naimisha forest had performed a sacrifice extending for twele years. In course of that sacrifice, after a particular one called Viśvajit had been completed, the Rishis set out for the country of the Pānchālas.......... Arrived those, they solicited the king for giving them 21 strong calves to be given away as dakhina in the sacrifice they had completed. Dalvya-vaka who was one of them became angry with his fellowmen and went to Dhriṭarāshtra (the father of the Kauravas or the descendent of Kuru, who ruled Kuru country from Hastinapur before Yudhishṭhira) and begged some animals of him. Meanwhile some of the cows of this king had died. He said. 'Wretch of a Brahmana, take, if though likest, these (dead) animals. Dalvya-vaka thereupon, filled with wrath, set his heart upon the destruction of king Dhritarāshtra. Cutting the flesh from off the dead animals, he poured these pieces as libations for the destruction of king Dhritarashtra's kingdom in the sacrifice at his hermitage. This kingdom began to waste away. He consulted the Brahmanas (his priests) ..... His counsellers reminded him of the evil he had done to Dalvya-vaka. The king proceeded to his hermitage on the Sarasvati and begged the rishiś pardon, who was pleased and freed his kingdom from calamities " [S'alya, *Mhb*, XLI]

(19) Yayāta : Here Yayati, the son of Nahusha, performed a sacrifice.

(20) Vashiśṭha pravaha : A great enmity arose between the two well-known rival priests Viśvāmitra (the son of Gādhi, a king of Kanauj, who was a kshatriya) and Vaśishṭha. The two lived at Sthānu (S'iva) tirth on either bank of the Sarasvati. Visvamitra, jealous of Vaśishtha's energy and influence, commanded the Sarasvati to bring bodily Vaśishtha to him, so that he may slay him. "Then that foremost of rivers, by her current, washed away one of her banks and bore Vaśishṭha away. Thereupon Vasishtha praised the river in these words :—

'O Sarasvati ! from the Grandsire's (mānasa) lake thou hast taken thy rise, O Sarasvati ! This whole universe is filled with thy excellent waters ! Wending through the firmament, O goddess, though impartest thy waters to the clouds ! All the waters are thee ! Through thee we exercise our thinking faculty . Thou art Pushti, and Dyuti, and Siddhi and Uma (these are the respective embodiments of growth, splendour, fame, and success, the last is a form of the Mother-goddess, Siva's spouse)! Thou art Speech, and thou art Swāhā (a magical formula) ! This whole universe is dependent on thee ! It is thou that dwellest in all creatures, in four forms'. Thus

praised by that great sage, Sarasvati, speedily bore that Brāhmaṇa towards the asylum of Viśvāmitra," [*Mhb*, S'alya, XLII]. Seing Visvamitra filled with wrath, the river, from fear of a Brahmana's slaughter, quickly bore Vasishtha away to her eastern bank once more. She thus had obeyed the words of both....Visvamitra thereupon addressed the river, "Since, O faremost of rivers, thou hast deceived me, let thy current be changed into blood that is acceptable to Rākshasas (a type of demons)." Then many Rakshasas settled on the Saraasvati. After some time, Rishis came and saw the water of the Sarasvati mixed with blood. The Sarasvati told them the whole story. Beholding the waters purified by these sages, the Rakshasas afflicted with hunger, sought the protection of the sages themselves stating that 'amongst the Vaiśyas and S'udras, and Kshatriyas, those that hate and injure Brahmanas became Rākshasas and that we are sinful in behaviour is not of our free will....Having purified the tirtha, the sages solicited the river for the relief of those Rakshasas. Understanding the views of those great Rishis, the Sarasvati caused her body to assume a new shape called Aruṇā. Bathing in that new river, the Rakshasas cast off their bodies and went to heaven.

(21) Soma-tirtha: Sacred to Karttikeya, situated in Samanta-panchaka or Kurukshetra region.

(22) Brahmayoni: Here the wood of Kuvera, the chief of the Yakshas, was situated.

(23) Vadarapāchana: Here many Rishis and Siddhas dwelt. "In this very tirtha the Seven Rishis had, on one occasion, left Arundhati, the wife of one of them, at this place and went to the Himavat (Himalaya) for procuring their sustenance, because of the occurrence of a twelve years draught, [*Mhb*, S'alya, L].

(24) S'akra-tirtha.

(25) Yamuna-tirtha.

(26) Sārasvat-tirtha: "Here, during a drought extending for 12 years, the sage Sārasvata in former days, taught the Vedas unto many foremost of Brāhmanas" [*Mhb*, S'alya, LI]. "During that drought the great Rishis, for the sake of sustenance, fled away. Beholding them scattered in all directions, the sage Sārasvat also set his heart on flight. The river Sarasvati then said unto him, 'Thou needst not, O son, depart hence, for I will always supply thee with food even here by giving thee large fishes! After 12 years' drought had passed away, the great Rishis solicited one

another for lectures on the Vedas. While wandering with famished stomachs, the Rishis had lost the knowledge of the Vedas. It chanced that some one amongst them encountered Sārasvata.... (then) all other Rishis came to him....and duly became his disciples and obtaining from him their Vedas, once more began to praise their rites. Sixty thousand Munis became disciples of the Rishi Sārasvata" [Mhb, S'alya, LI].

(27) Samantapanchaka and Kurukshetra[27] "The land between Tarantuka and Arantuka and the lakes of Rāma and S'āmachakra, is known as Kurukshetra and Samantapanchaka lying within it is called the northern (sacrificial) altar of Brahman, the Lord of all creatures." [Mhb, S'alya, LIII]. "The royal sage Kuru had in days of yore, tilled this plain (hence 'Kuru-kshetra, i. e, 'Kuru's farm') and S'akrā (Indra) had promised great merit unto those that would cast off their life-breaths here....The very dust of Kurukshetra, borne away by the wind, shall cleanse persons of wicked acts and bear them to heaven" [Ibid.]. The hero Paraśurāma created here five lakes of blood (Mhb, Ādi, p. II; Vana, CXVIII). Takshaka, a Nāga King, resided here on the Ikshumati river [Mhb, Ādi, III, 139–42]. Māndhātā performed a sacrifice at a plate in Kurukshetra [Mhb, Vana, CXXVI, 45]. The Sarasvati appeared here as the Oghavati [Mhb, S'alya, XXXVIII, 3, 4].

(28) An unnamed hermitage, where Baladeva began to ascend the Himavat mountain, where he beheld the glory of the Sarasvati.

(29) Plakshaprasravaṇa: Here the Sarasvati had its source [Mhb, Adi, CLXIX, 20-21 : S'alya, LIV, 11].

27–Kurukshetra (a Rly, station on the Delhi-Panipat-Ambala chord line of N. Rly.) where Thāneshwar is situated, is another identifiable place on Baladeva's sojourn along the Sarasvati. Here the Mahabharata war was fought. We have alreadly seen that according to the Rigveda {104-I, 3} the area where the Kurus ruled was formerly under the Bhāratas, who had originally hailed as the Pauravas or the descendents of Puru, one of the five sons of Yayāti of the Lunar dynasty of the Vaṃśānucharita book of the Puranas. Kurukshetra finds no mantion in the Rigveda or other saṃhitas. It begins to be referred to in the Vedic literature from the Brāhamaṇās [*Panchaviṃśa* - b. XXXV, 10 : *S'atapatha*, IV, 1, 5, 13; XI, 5, 1, 4, XIV, 1, 1, 2 : *Aitareya* VII, 30 : *Jaiminiya*, III, 126 etc.]. These Brāhmaṇa texts regard it as a sacred country. Within its limits flowed the rivers the Sarasvati, the Apāyā [only once mentioned in the Rigveda III, 23, 4, in the manner suggesting its location between the Sarasvati and the Dṛishadvat (= 'stony') mentioned in the Rigveda III, 23, 4, etc.]. "Here, too, was situated S'aryaṇāvant, which appears to have been a lake, like that known to the S'atapatha Brāhmaṇa by the name of Anyatahplaksā. The boundaries of Kurukshetra are given in a passage of the Taittiriya Āraṇyaka (V, I, I) as being Khāṇḍava on the south, the Tūrghna on the north and the Parīnah on the west" [VI, I, p. 170-1]

Here ends Baladeva's 'pratisrota-Sarasvati-yātrā' or the pilgrimage of the Sarasvatī towards the source, as it occurs in the Mahābhārata, S'alya-parva, Gadāyuddha sub-parva. "Some years after this battle", writes F. E. Pargiter, "the Yādavas of Gujarat were ruined by pratricidal strife and Krishṇa died. Under Arjuna's leadership they abandoned Dvāraka (on which the sea encroached) and Gujarat and retreated northwards, but were attacked and broken up by the rude Abhiras of Rajputana (on the Sarasvati, whose dry bed was now a thoroughfare). Arjuna established Hārdika's son at Mārttikāvata, Yuyudhāna's grandson on the Sarasvati, and bringing the bulk of the people to Indraprastha (Delhi) placed Vajra, the surviving Vrishṇi prince, as king over them [*Mhb.* Mahapra sth., 7, 185-153]. Yudhishthira abdicated and placed Arjuna's grandson Parikshit II on the throne" [*AIHT*, p. 284].

4. Parikshit II : If Parikshit of the Atharva-veda, XX, 127, 7-10, was a real personage, it is, however, difficult to find out whether this was the pre-Mahabharta or the post-Mahabharta Parikshita of the Puranas. "The throne of the Kurus after the retirement of Yudhishṭhira", states G. K. Pillai, "was not a bed of roses. The country was overran by the Nāgas, and Parikshit II himself was slain.....But what was the loss for the nobility was a gain to the priesthood. Great literary activities prevailed. Post-Vedic literature began to appear in which class interest began to predominate. Yet the priesthood of that time is mainly responsible for what we know about ancient India" [*THI*, p. 142-3].

The Vishṇu-purāṇa [IV, 21, 2] was first compiled in the time of Parikshit. "The Kali Age commenced with the death of Krishṇa and began to spread everywhere. Parikshit was ruling over Kuru-jāngala. He persued Kali whom he found on the Sarasvati, where Prithivi or the earth had assumed the form of a cow. Kali surrendered, and asked for an abode. Parikshit instructed him to reside in gamble, wine, adultery, gold, and violence. [*Bhāg*, I, 16-7].

3. Janmejaya III : He is mentioned in the *S'atapatha-brāhmaṇa*, XIII, 5, 4: *Aitareya* br., VII, 34., VIII, 11, 28, etc., as a performer of the Aśvamedha or the horse-sacrifice. His capital was Asandivat or mod. Asānd near Karnāl [*S'atapatha*, XIII, 5, 4, 2: *Aitareya*, VIII, 21]. The priest who performed the sacrifice for him was Indrota Daivāpi S'aunak [*S'atapatha*, XIII, 5, 4, 1, etc.]. On the other hand, the Aitareya br., VIII, 21, which also mentions his Aśvamedha, names Tura Kāvasheya as his priest. It also contains an obscure tale stating that at one of his sacrifices, he did not employ the Kāśyapas, but the Bhūtaviras, being, however, induced by the Asitamṛgas to have recourse to the Kāśyapas again [*Aitareya br.* I, 2, 5]. "The great slaughter of the Kshatriyas in the battle must have seriously weakened the stability of the kingdoms, especially in the north-

west, which was faced by hostile frontier tribes. Nāgas established themselves at Takshaśilā (Taxila) and assailed Hastināpura — which indicates that the Punjab kingdoms that played so prominent a part in the battle had fallen. The Nāgas killed Parikshit II, but his son Janmejaya III defeated them and peace was made. Still they held the north-west. The principalities on the Sarasvati and at Indraprastha disappeard, and Hastinapur remained the outpost of the Hindu kingdoms of North India" [Pargiter F. E., *AIHT*, p. 215]. "Though Janamejaya III was placed on the throne after sacrificing all the Nāgas, his position does not appear to have been very enviable. The Mahabhārata says that he was cursed by Vaiśampāyana for following the teachings of Yājnyavalka and establishing a Vedic school." [Pillai, G. K., *THI*, 149-50]. "In the Vedic literature, Janamejaya appears with his patronymic Pārikshit who was famous at the end of the Brāhmaṇa period. The Aitareya Brāhmaṇa states that at one sacrifice he did not employ the Kāśyapas which eventually resulted in a tussle between them [*Ved. Ind.*, I. 273-4, etc.]. H. C. Raychaudhuri states from the evidence of the Brahmana literature that this Janamejaya had performed two aśvamedhas and that it was at the performance of the second aśvamedha that he had quarrels with the Kāśyapas [*Political History of Ancient India* or *PHAI*, Cal. Uni., 1950, d. 15, 30]. Pargiter concludes that the story of Parikshit's ruin at the hands of Brahmins is a mixture of Kshatriya (bardic) and Brahmin (priestly) traditions [*AIHT*, p. 50]. The Matsya Purana gives a different version stating that the king made successful stand initially but yielded later and after making his son S'atānika the king, retired to the forest. According to the *Mahabharata* Svarg. 5, 34, Janamejaya sometimes held his court at Taxila, and it was at Taxila that Vaiśampāyana is said to have related to him the story of the Mahābhārata War (the Jaya) at the instance of Krishna Dvaipāyana Vyāsa [*Mhb*, Adi. 54]. Sacrifices threatened to have serious repercussions on the fortunes of the royal family even in the days of Janamejaya. The performance of ritual in the approved form by proper persons seems to have excited as much interest in the Kuru country as philosophical discussions did at the court of Videha" [Raychaudhuri, H. C., *PHAI*, p. 45]. At the same time the Bhārgava sage S'aunaka was performing a Dirgha-satra in the Naimishāraṇya forest in the Gangetic basin. Ugraśravā, the son of the bard Lomoharshaṇa reached there and recited the Jaya [*Mhb*, Adi. 44, 49; I, 2].

2. S'atānika : He listened the Jaya at Takshaśilā while sitting in the laps of his father Janamejaya [*Bhavishya* p. I, I, 67].

1. Aśvamedhadatta :

0. Adhisimakrishṇa :

"After Janamejaya III," writes G. K. Pillai, "the Atharvedic priests appear to have placed S'atānika on the throne. Satanika may have been a follower of their sect. He was succeeded by Aśvamedhadatta and he

by Adhisimakrishna. A
going on during this p
use the future tense in r
krishna, must have had t
like Vishnu Purana must
of the Vedic Samhitas we
of the Atharva Vedic
which made the antique
Vedangas also must have

126-I. We have thus seen in the f
Atharva-veda (XV, 6, 4) as pre-existing w
Vaṃśānucharita book about the first stage of
farming communities of the Old World app
course of their crossing, while moving in op
suggested by anthropo-ecological factors {4
archaeological evidence and its interpretation
have come down to us bear witness to have
Dvaipayana Vyāsa in such a manner as they
cult in interest of its propagation under the
We are going to discuss this subject elsewh
the Puranas have escaped this recasting in ce
at a later occasion. Whatever the Puran
related to those Sarasvatis, which were renam
later Sarasvatis, it is only the Sarasvati of
that has to do something with the original Sa
no structural relationship with the mighty ri
accounts of some of the Puranas in this res
conception of the Sarasvati as it has some be

127-I. The Vāmana-purāna purports
(Vāmana) of the god Vishṇu, situated in Kur
work in its extant form belongs to the fir
V. S., Vāmana Purāna-A Study, Varanasi,
part are comparatively earlier. Chapter 32 of
the Sarasvati as it is conceived to flow in Ku
source at Plaksha-prasravaṇa and then it en
gives an account of Kurukshetra. Ch. 34 co
rivers of Kurukshetra. The seven rivers are
Amulā, the Kauśiki, the Dṛishadvati and
rivers were 'varshā-kāla-vahā' or wadis

128-I. The Tirtha-yātrā of Kuruksh
shrine of Arantuka (Prithudaka). At Aditiv
order to obtain a son. At Satata or Sannih
where the Kauśiki meets the Dṛishadvati sin
bath. Daksheśvara Siva is worshipped at D

eat deal of literary activity was evidently
iod. The Puranas like Vāyu and Matsya, that
pect of all events from the date of Adhisima-
r commencement from his days, while those
ve theirs from the days of Parikhit II. Several
made during this interval. Yāska, probably
ool, made his Nirukta (Vedic Dictionary)
rms used in the Vedas intelligible. The other
en made during this period. [*THAI*, p. 150-I].

egoing that the Puranas mentioned in the
ks, offer too little in direct terms in their
e Sarasvati {104, 105-I}, when the two basic
to have been living together on it in the
site directions in search of new lands, as is
44-I}, and as we discern in the light of
83–85-I}. But the Puranas in the form they
been recast by the Vedic School of Krishṇa
y conform to the Indo–Middle Eastern Vedic
ronage of the post – Mahabharata Kuru kings
. However, some accounts in other books of
ain respects, about which also we shall speak
contain about the great river is mainly
after its disappearance {96-I}. Out of these
urukshetra dealt with by the Vāmanapurāṇa
vati as one of its tributaries. All others had
. However, it is necessary to review the
ct, in order to trace the development of the
ing on history.

o glorify a shrine of the Dwarf – incarnation
shetra {125-I, 29} area at Koṭi – tīrtha. The
half of the seventh century A D [Agrawalla
4, p. ii], though its contents for the most
Vāmana – purāṇa describes in religious terms
kshetra. It is stated that the Sarasvati has its
rs the Dvaita – vana (*vana* = forest). Ch. 3
ins the names of the seven forests and seven
he Sarasvati, the Vaitaraṇī, the Āpagā, the
Hiraṇyavati. It is stated further that these
rying water during the rainy season only.

ra [Vāmana-p. XXXV] commences from the
a Devamātā Aditi performed austerities
Vishnu is worshipped. At Pariplava – tirtha
criminal acts is washed off by having a sacred
hāīrama. S ālūkini, referred to also in the

Mahābhāshya, is sacred to both Vishnu and S'iva. Sarpa-darvi is identified with mod. Safidon [Agrawala, V. S., op. cit., p. 66]. Next is (Ta) rantuka. Thence one goes to Panchanada, a spot sacred to five rivers. Next tirthas were Pauṇḍarika (= Pundri, Agrawala, op. cit., p. 66), Munjavat having a shrine of the yakshi Ulūkhala-Mekhalā, Rāma-hṛada or five pools associated with Paraśu-Rāma, Mānusha-tirtha from where the river Āpagā was a *krośa* to the east, Brahmodumbara, Kapisthala (Kaithal), Kalasi, Saraka, Rudrakoṭi, Iḍaspada, Kedāra-tirtha, Nāgahṛada, Pravishṭa on the Vaitaraṇi, Phalaki-vana (on the Drishadvati), Misraka, Vyāsa-vana, Madhu-vana, Vyāsasthali, Tilaprastha (= Tilpat), Sudina, Vāmanaka, Sūrya-tirtha, Hanumatasthāna, S'rikunja on the Sarasvati, Naimisha-kunja, Kanyā-tirtha, Sapta-sarasvati-tirtha where the seven channels of the Sarasvati (Subrabhā brought from Pushkara by Markandeya, Kanchanākshi, Vimalā, Manasahradā, Sarasvat-toyā, Sāvarṇā and Vimalodakā), Auśanasa-tirth or Kapālamochana, Prithudaka (Pehowa), Avakirna of Vaka-Dālbhya, Yayāta on the river Madhu, Madhusrava, Vasishṭha-vāhaka, Anaraka, Kāmyaka-vana where god Sūrya (Sun) is installed at Pūshā, Vihāra-tirtha in Kāma-vana, Durga-tirtha, Prachi-Sarasvati-tirtha, Sthānu-tirtha, etc.

129-I. "Two original features of this area", writes Agrawala, "sprang into prominent relief of which the original was the belt of seven forests, (enumerated north — south, kāmyaka-vana, Aditi-vana, Vyāsa-vana, Phalaki-vana, Sūrya-vana, Madhu-vana, and Sitā-vana) ....second notable feature was the conception of the holy land in terms of four Yaksha shrines, punctuating the four corners or important points in the circumambulation of the sacred area....Arantuka at Pṛithudadaka, probably Tarantuka in Sthāneśvara, the shrine dedicated to Kapila, the husband of the Yakshi Ulukhala-Mekhalā, who was originally a blood-sucking ogress (shrine at Pundarika). The fourth of Machakruka which should be located in the western region. This seems to have been the Samantapanchaka marked by four Yaksha spots. This conception emerged at a time when Yaksha worship preceded that of S'iva worship as in many other regions of the country. The second stage in the evolution of the holy land of Kurukshetra was marked by the emergence of Kurukrhetra as the place brought under cultivation by king Kuru who is said to have cleared an area of seven krósas under his plough" [*op cit.* p. 186-7].

130-I. The accounts of the Sarasvati still later than that of the Vāmana-purana, which belongs to c. 7th century AD, are found in the Padma-purāna (Sṛishṭi and Uttara Khanḍas or books) and the Skanda-purāna [Prabhāsa and Nāgara khanḍas], in the form of mahātmyas or compositions purporting to glorify the sanctity of a sacred place (tirtha), an area (kshetra) or a river. The Sarasvati of these Puranas is not the entire river from the source to the mouth as we find it in Baladeva's pilgrimage in the Mahabharata. The Sarasvati was so much sacred and dear to the early Indians that they could not reconcile themselves to its dis-appearance, and named a large number of streams spreading from Bengal in the east to Gujarat in the west after it {96, 99-I}. The Puranas deal with these later Sarasvatis as we have mentioned earlier, but in doing so they follow the tradition of the Mahabharata for the pattern of their descriptions. The Vamana, as we have seen {127, 121-I}, deals with Kuru-kshetra. The Skanda treats of the two Sarasvatis, the first, a small stream that rises in the Gir hills in the Saurashtra or Kathiawar peninsula and falls into the Arabian Sea at Prabhās-Somnāth; and the other, a river of north Gujarat, which originates in the adjacent Aravallis and past the historic towns of Siddhpur (anc. S'risthala) and Pāṭan (Anahillapura-pattana,

which was the capital of Gujarat from 746 to 1413 AD) meets the Little Rann ('aranya' or uninhabited area, the Saindhavāraṇya of the Mhb, Vana, LXXXIX, located in Ānartta) at Jhilānand near Khārāghoḍā, 75 miles NWW of Ahmedabad.

THE SARASVATI, KURUKSHETRA, AND THE KURUS

131-I. A geomorphological study of the rivers of the northern India flowing between the Yamuna and the Sutlej suggests that the bed of the Ghaggar must have formed the upper course of the Nāli-Hākḍā-Wahindā-Mihrāṇ-Nārā-Purāṇ channel, and not that subsequently-named stream as the Sarasvati on which Thaneshwar (Kurukshetra, N. Rly.) and Pehowa (N. Rly.) or ancient Prithudaka are situated. This later stream was formerly called the Oghavati {96-I} and is mentioned in the early medieval records as the 'Prāchī Sarasvati' {Fn. 26} and not as the 'Sarasvati'. It rises between the Mārkanḍā and the Yamunā as a small stream on the outer flanks of the Siwaliks. "It debouches on the plains" according to *IG*, XXII, p. 97, " at Adh Badri, a place held sacred. A few miles to the south it disappears in the sand, but comes up again near Bhawanipur. At Bālchhapar it again vanishes, but emerges once more and flows on in a south-westerly direction across Karnal, until it joins the Ghagger after a course of about 110 miles." A river now called Sarasvati which flows into the Rann of Kachha in north Gujarat {103-I} was also known as the Prāchī Sarasvati according to a later work entitled the Sarasvati-Purāṇa; but this stream, unlike that of Kurukshetra, had virtually nothing to do morphologically with the original Sarasvati of the Rigvedic and earlier times.

AGNI-VAIŚVĀNARA AND VAḌAVĀNALA

132-I. The drying up of the river Sarasvati and the sea over the Ranns of Kachchha into which the former fell, appears to have been symbolized in the ancient Indian tradition as the Agni-Vaiśvānara [Bhg. p. II, 2, 24; Vayu-p., XV, 3-8, etc.;] and Vaḍavānala or Vaḍavāgni [*Mhb.* Adi, XXI, 16; Sauptik, XVIII, 2, etc. · A fire residing in the sea that consumes the waters, associated with the sage Ourva, and having the head of a vaḍavā or mare, hence the name], respectively.

133-I. The territories called Kośala (Oudh of which Lucknow is the center : Ayodhyā near Fyzabad was the capital of Kośala) and Videha (northern Bihār or Mithilā) lying in the middle Gangetic basin, do not find mention in the earlier Vedic works. They find first reference in the S'atapatha Brāhmana, I, 4; I 10, etc. The Purānas, on the other hand, refer to Kośala as the seat of India's earliest Indo-Aryan monarchial city-state, which is generally held pre-Vedic in date by various students of the Puranic history of India as we shall see later. Videgha Māṭhava, the king of the Videhas, accompanied by his priest Gotama Rāhugana, is spoken of in the S'atapatha Br., I, 4, I, 10; X, 4, 3, etc., as carrying the sacrificial fire from the bank of the Sarasvati over Kośala eastward across the Sadānirā {in this name which means 'a perennial river', the root *nira* for the water is Dravidian}, and as establishing a settlement which was known as Videha after the tribal name of Māṭhava. The story preserves the tradition that the Videhas received their culture from the west, and that Kośala was Brahmanized before Videha " [Pusalkar, A. D., 'Aryan Settlements in India', *The Vedic India*, Lon, 1952, p. 254-5]. " The Brahmanas did not become priests to Aila Kings {of Pratishṭhāna} elsewhere until about the time of Dushyanta and Bharata...... The Brāhmanas thus had little to do

with the Aryan conquest.... Where the Brahmanas did claim some credit, is in the story of Māthava, king of Videgha (Videha), and his priest Gotama Rāhugaṇa, carrying Agni Vaiśvānara burning on the way over the Paurava and Ayodhya realm [Pargiter, F. E., *AIHT*, p. 31 l].

134-I. Our above review of the account of the Sarasvati in the ancient Indian literature has shown us that this river, which according to the Rigveda dated in its extant form to the middle of the second millenium BC, had been flowing from the mountains to the sea, both unspecified. It finds details of its entire course from the mouth to the sea in the Mahābhārata which reflects the conditions of the last centuries of that millenium in India, as a river whose flow is dried up in its various portions here and there, as issuing from a snow-fed source as the term *prasravaṇa* (Sanskrita, 'oozing') occurring in the name of the place of its origin { 125-I (129), Plakshaprasravaṇa } suggests, and as meeting the sea at Prabhās, situated in Surāshṭra [*Mhb*, Vana, LXXXVIII, 20], the present Saurashtra or Kathiawar peninsula in the western India. The Great Epic says practically nothing about the cause which brought about this physical change. Curiously enough, the tradition of this catastrophe occurs in the Ramāyaṇa { 125-I, 35 }, a comparatively later work in its present form that purports to record the state of affairs of a period some 30 reigns before the time of the heroes of the Mahābhārata. We have also noticed the fact that at least the Vamśānucharita book of the Puranas has hardly anything substantial to offer about the pre-Vedic Sarasvati, which should have had earlier some other name { 104-I (2) }, despite the fact that these works carry back the dynastic accounts of India some 92 reigns before the Mahabharata War { 125-I, Before Flood, 98 } ; nay earlier still into the realm of mythology. The recasting of the Puranas subsequently at the hands of the Vedic school, seems to have wrought many a changes in their contents. Thus, the Sarasvati of the Puranas, as we have noticed, is not the original Sarasvati, but the various rivers that received this name after the disappearance of the great protohistoric river { 96-I }.

We have seen that it is only in the Mahabharata { 125-I, 6 } that we find a detailed description of the entire course of the Sarasvati. However, on our plotting this course on a physiographic map, we find that it would have been impossible for the channel of this river to come as far south as Prabhās, in order to fall into the open Arabian Sea, because in doing so the river would have required to cross the Rann of Kachchha, which was formerly an arm of the Arabian Sea. A school of historians in Gujarat headed by the late Ratnamaṇirao B. Jote [*Khambhāt-no-Itihāsa* or History of Cambay in Gujarati, Gujarat Sahitya Sabha, Ahmedabad, 1935, pp. 157-06] maintains on the basis of the Skanda-purana, Prabhās-khanḍa, etc., which is indeed very late among the later Puranas, that the Sarasvati flowed into the Gulf of Cambay, incorporating on its way the present Luni of Rajasthan and the modern Sarasvati of the north Gujarat.

135-I. Bhailalbhai D. Patel, the founder of Vallabh Vidyanagar and its University, the Vallabhbhai Vidyapeeth, who was formerly an engineer in Sind and had studied the ancient drainage of that area, supports Jote's view about the location of the Sarasvati and adds that it was land where we find today the Gulf of Cambay and the Sarasvati, after flowing between Gujarat and Saurashtra and receiving in its delta, now submerged, the Sabarmati, the Mahī, the Narmadā, the Ḍhāḍhar and the Tapti rivers as its tributaries, fell into the Arabian Sea. Shri Patel states further that the Vipāśā (Beas) flowed formerly between the Indus and the

Sarasvati, and occupying what we know today as the course of the Eastern Nārā in the lower Sind and the Kori Creek in Kachchha (Kutch), met the Arabian Sea to the east of the mouth of the Indus.

Any geographer or geologist will rule out the theory of A. C. Das, who carries the sea right into the heart of India, an event of the pre-human Tertiary Era of millions of years ago, and imagines the Sarasvati as falling into it [*Rigvedic Culture*, Cal, 1925, pp. 2–4].

It would be worth while now to take the note of the researches of other previous workers of note, who have dealt with the fascinating subject of the Sarasvati and its disappearance.

MODERN GEOGRAPHERS ON THE SARASVATI

136-I. We have already taken note of the two writings of the modern geographers on the great *wadi* {94-I}, forming earlier the course of the Sarasvati. It should be noted in this connection that the drying up of this great Indian protohistoric river is associated with the formation of the Indian Desert comprising the Thar in the Indian Union (local people call it thaḷa : it covers an area of about 100000 sq. mls. stretching mainly in the north-western and western parts of Rajasthan) and the Thal in Pakistan (it covers an area of about 300.000 acres, in the Sind-Sagar Doab, West Panjab), and the withdrawal of the marine conditions from the Ranns of Kachchha and the Bhal in the western India. The modern geographers therefore treat, in the most cases, all the three physical phenomena together attributable largely to a single tectonic and desiccational activity. The following is a list of noteworthy contributions on the subject :-

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2. Baker, Sir W. E. 'Report on the Upper Portion of the Eastern Nārā', *Sel. Rec. Bom. Govt.* XLV, 1857, p. 1–5.
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7. Powlett, P. W., The Gazetteer of the Bikaner State, 1874, 1932.
8. Oldham, C. F., 'Notes on the Lost River of the Indian Desert', *CR*, LIX, 1874, pp. 1–27.
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(b) Gambhir Singh, Col., 'Extention of the Indian Desert'.

(c) Banerji, S. K., 'Weather Factors in the Creatian and Maintenance of Rajputana Desert'.

(d) Vats, M. S. 'Conditions of the Rajputana Desert: The Archaeological Evidence'.

(e) Hora, S. L., 'Certain Palaeogeographical Features of Rajasthan as evidenced by the Distribution of Fishes'

(f) Agarkar, S. P., 'Plant Ecology of the Rajputana Desert.'

(g) Pruthi, H. S., 'Insect Fauna of the Rajasthan Desert'.

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(i) Ramdas, L. A., 'Desert Hydrology'.

" Evidence of history has been adduced to show that upto 600 AD there were sites of human habitation along the dried up bed of the Sarasvati and that towards 1000 AD, the population in the western part of the Sarasvti valley became nomadic, probably as a result of the complete desiccation of land. Let us reconstruct the past sequence of events as revealed at the symposium.

(1) About 5000–4000 BC, the desert area seems to have been well wooded and the marshy conditions prevailed enabling animals like rhinoceros to move about.

(2) About 3000–2000 BC, Harappa (Indus) culture flourished in the valley of the Sarasvati River.

(3) About 1000 BC, there were sites of human habitation along the dried up rivers but the mode of life seems to have undergone some change already.

(4) About 300 BC–400 AD, there were several prosperous towns, such as Nagri, Hagar, Pushkar, Sambhar, Rairh and Bairat in the desert area. From the 5th and 6th century onward, there is epigraphical evidence that Marubhumi (Jodhpur) was populated by foreign and Indian tribes.

(5) About 1000 AD, the desert conditions had become established and the people had taken to nomadic life. ".
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136–I. The large *wadi* consisting of the broad bed represented today by the Nali-Hakda-Wahinda-Mihran-Nara-Puran channel {131–I}, traceable from the ancient *tirtha* of Narāyan Sarovar [*Bhāgvat*, I. 5, 3] northwards running parallel to the Indus in Sind and then turning east into northern Rajasthan, for about 700 miles to Sirsa, has reasonably been identified by geographers like Oldham and others with the Rigvedic Sarasvati, a fact strongly supported by the ancient Indian literary evidence, as we have reviewed. It was, no doubt, a mighty river, greater than the Indus, as its channel as wider as five miles at places, a fact recorded in the Rigveda {104–I (1)}, suggests. The history of the disappearance of such a great river, to whose banks the Indian tradition traces the origin of the Indian civilization, has fascinated larger a number of geographers and historians than has done any other river of the world history. The main line of argument is that the present Sarasvati, a rain-fed stream rising on the southern flanks of the sub-Himalayan Siwaliks in the Sirmur district of Himachal Pradesh, could not have been the channel of the Sarasvati beyond Rasauli near Kaithal : that it

is indeed the bed of the Ghaggar that fits better into the picture than other streams of the East Punjab : that the Yamuna from the left and the Sutlej from the right were two snow-fed perennial tributaries of the Sarasvati, whose waters rendered it a flowing mighty river : that the Sarasvati disappeared when these tributaries turned towards the Ganga and the Indus, respectively, and deserted the Sarasvati, as a result of some catastrophic structural change like an earthquake of great magnitude. Other views attribute the drying up of the Sarasvati to structural changes in the upper course of the river in the sub-Himalayan hills.

OBSERVATIONS ON THE SARASVATI

137-I. " The outer range of hills west of the Jumna ", observe Burrard and Hayden, " is drained by a small river called the Ghaggar; this stream is of interest, because the Ghaggar is said to have crossed the plains of the Punjab at one time as a considerable river. In the Rajputana desert the wide bed of an extinct river, called the Hukra, can still be traced for miles through the sand and the Hukra may have been a continuation of the Ghaggar. This we cannot decide, but one thing seems certain: the Ghaggar could never have been a larger river, had its Himalayan catchment basin been always as small as at present: and the question arises as to whether the Giri (a tributary of the Yamuna) could formerly have drained into the Ghaggar and given to it the volume of water that tradition ascribes to it ". [*Geography & Geology of Himalaya Mountains & Tibet*, 1907, p. 136]. " A inspection of the map accompanying this chapter ", write W. T. Blanford and H. B. Medlicott, " will show a dried up river channel, which can be traced from the neighbourhood of Sirsa into connection with the eastern Narra in Sind, and local tradition states that this was formerly occupied by a flowing river. The origin of the channel is situated at the junction of the alluvial fans of the Sutlej and Jumna. There can be no room for doubt that, within the period known geologically as recent, this river channel carried a flowing stream to the sea. The traditions of the Hindus point to a time when a large and sacred river, known as the Sarasvati, pursued its course through the eastern Punjab. The modern Sarasvati is an insignificant stream fed by the drainage of the outer hills alone.... the most reasonable explanation is suggested by Mr. Fergusson, that the Sarasvati was in fact the Jumna, which, in the Vedic period, pursued a westerly course to the sea, probably down the dry river channel just referred to. This bringing of the change of the Jumna river, which has indubitably taken place, down to so recent a period is interesting, for the change must have occurred previous to the present distinction of *khādar* and *bhāngar*, and if this distinction has been produced since the Aryan invasion, the question naturally arises whether it may be due, not to movements of elevation or deppression, but to the clearing of the land from forest, and the extension of cultivation in the plains and more especialy in the hills, which, by allowing the rain to flow more quickly off the surface, would increase the erosive power of the rivers when in flood ". [*A Manual of the Geology of India & Burma*, 1893, pp. 450-1]

138-I. " Except for a few streams at each end ", states O. H. K. Spate, " the drainage of the 100-mile long Siwalik ridge between Sutlej and Jumna is either dissipated into the fields, or converge into the Ghaggar. The identification of this stream with the Sarasvati, the lost river of the Vedic hymns, seems secure enough....But the old records tell of a mighty river, 'rich in lakes' and the 'mother of cities' and the Ghaggar of today, although the only river actually piercing the Siwaliks between Sutlej and Jumna, is rain-fed only, and at a short distance from the hills it becomes non-perennial, a monsoon river merely. Even its

rainy season flow normally ceases at Hanumangarh, about 290 miles from its source; occasionally it extends for another 16 miles or so. Its dry course, the Hakra, in Bikaner and Bahawalpur, is impressive enough : for over 100 miles the flat bed is nowhere less than two miles wide, in places four miles, bordered on either hand by steep and continuous lines of dunes.....The diversion, natural, or artificial, of some upper Ghaggar tributaries into Jumna and Sutlej is a contributory factor in the dwindling of the river. The Indo-Gangetic divide has been settled for three millenia, and main communication lines lie athward the drainage : the cumulative effects of their interference with the drainage lines is probably not small. The destruction of the plains forests in the north, generations of cultivation and over-pasturing, irrigation diversion, not to mention the Siwalik deforestation have resulted in toorapid run-off " [*India & Pakistan*, 1954, pp. 485-6].

139-I. According to the Rigveda, III, 23, 4, the Āpayā and the Drishadvati were the tributaries of the Sarasvati. The Mahabharata, Vana, LXXXIII, 68, mentions a river called the Āpagā in Kurukshetra, though it is not mentioned in Baladeva's pilgrimage. We have before us three descriptions of the Kurukshetra region, namely, two descriptions found in the *Mahabharata*, Vana parva and S'alya parva, and the one found in the *Vāmana purana*. We have already noticed that according to the *Vamana purana*, Kurukshetra was bordered by four shrines of the Yakshas[28] { 129-I }. According to the *Mhb*, Vana, LXXXIII, "Those who reside in Kurukshetra, which lies to the north of the river Drishadvati and the south of the Sarasvati, really reside in heaven.... That which lies between Tarantuka and Arantuka and the lakes of Rama and Machakruka is Kurukshetra. It is also called Samantapanchaka and is said to be the northern sacrificial altar of Brahma." It would be intersting here to discuss the geography of Kurukshetra by a comparative study of the above three ancient Indian literary accounts of the Kurukshetra Doab.

140-I. Let us take it for granted that the stages of Baladeva's sojourn along the Sarasvati are successive. On the basis of the passage, "Naimisha forest. ....the Sarasvati once more flowed in a westerly direction....there in Kurukshetra bathing in tirthas, Bala (deva) repaired to Sapta-Sārasvata" { 125-I, (II) }, we take Kurukshetra as beginning from Naimisha forest on Baladeva's route. In the Vāmana purana, we find 104 places of pilgrimage located in Kurukshetra, some of which we have already noticed { 121-I }. In the order of the following places, the three accounts correspond closely :—

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28 - "A class of supernatural beings attendant on Kuvera, the god of wealth. Authorities differ as to their origin. They have no very special attributes, but they are generally considered as inoffensive, and so are called Puṇya-janas, 'good people'. It is a *Yaksha* in whose mouth Kālidāsa placed his poem Meghaduta" [GDHM, p. 373]. "Yaksha (1) — a son of Khaśā. As he wanted to eat his own mother, he got the name of Yaksha, of four hands and four feet .....went home in the Himalayas. (2) — A semi-celestial group, born of Viśvā and Kāśyapa, followers of Rudra (Siva), their overlord; their lord Kubera; helped Vṛitra against Indra and went with Sati to Daksha's sacrifice; usurped the Ānarta (Gujarat) kingdom of Kakudmi when he was absent at Brahma's court; came with the gods to see Krishna and saw him retiring to his own region; worship the Pitṛis (manes) and ruin the śrāddha" [PI, III, p. 1].

141–I. Today the area approximating Kurukshetra, occupying strategically the Indo-Gangetic divide in the East Punjab, is traversed by seven parallel-running streams draining the area lying between the Sutlej and the Yamuna, namely, in an order from the north to the south, the Sirhind *choa*, the Patialewali Nadi, the Ghaggar, the Markanda-Sarasvati, the Johiya, the Chautang, and the Karnal stream now occupied by the West Jumna Canal (Tajewala head -work) which is understood to have once occupied by the Yamuna itself, forming a tributary to the Sarasvati. The proximity of the Drishaduati to Sarpa-darvi-tirtha, identified by V. S. Agrawala with Safidon [*Vamana Purana* – a study, p. 66], is a factor supporting the identification of the Dṛishadvati with the Chautang. It received the Kauśiki as a tributary according to both the Mhb, Vana-p, LXXXIII, and the Vamana purana, XXXIV. A physiographic study of the area suggests that the wadis of the Dohan that flows past Mahendragarh (N. Rly.) in the northeastern Rajasthan, and the Kānṭli of Chiḷāwā-Rājgarh, must have flowed into the Nāli-Hākra in the vicinity of Suratgarh, where we find the bed of the Chautang (Drishadvati) as joining this mighty channel. Just opposite to the area of the confluence of the Kantli, the Dohan, the Karnal channel, the Chautang, the Sarasvati, and the Ghaggar, the old bed through which the Sutlej is understood to have met the Hākḍo (this is the corect name, and not the Hakra), is still visible, and still the old scene is revived at the time of floods. We may not be far wrong in locating the Sapta-Sarasvata-tirtha of the *Mahabharata*, Vana LXXXIII, S'alya, XXXVIII, and the Vamana Purana, XXXVII, in the area between Rangmahal and Anupgarh in Ganganagar dist. of Rajasthan, where we find the wadi bed to be for wider than elsewhere.

142–I. The Āpagā of the *Mahabharata*, Vana, LXXXIII, etc., and the Vāmana p. XXXVI, may well be traced to the Āpayā of the Rigveda, III, 23, 4, which flowed, as the context suggests, between the Sarasvati and the Drishadvati. The proximity of the Āpayā of the Rigveda, III, 23, 4, which flowed, as the context suggests, between the Sarasvati and the Drishadvati, to Kapisthala (Kaithal), and Punḍarika (Pundri), as indicated in the above accounts, leads us to look upon the Johiya as the most likely modern representative of the Rigvedic Āpayā. We have discussed how the name Sarasvati seams to have been coined by the Rigvedic Indo-Aryans, for this river, because they may not have come into contact of the earlier occupants from whom they could have learnt the original name of the river when it must have been in its first stage {104-I (I) }. The name āpagā or āpayā is traceable to the Sanskrit root 'āpas' (= water : Pers. āb = water) We have seen how a Dravidian root for 'water' (*nīra*) occurs in the river-name Sadānirā {133-I}, which finds mention in the S'atapatha Br. dateable to about 1000 BC. In the same manner, the root *khal* for 'stream', occurs continuously from Kerala to Rajasthan, viz., *Khāyal* in Kerala, *Khāḍī* in south Gujarat, *Khāl* in Malwa, etc. The term 'Gangā' has been traced for its origin to an Austric root [Pandya, A. V., *VVRB*, I, 2, 1957–58, pp. 11–12]. The name 'Drishadvati', meaning 'stony', occurring in the Rigveda, III, 23, 4, poses here a issue. A people like the Vedic community entering from the west, can hardly be supposed to have given such a name to a river flowing in the open alluvial plains, where pebbles or rock do not occur in its bed.

All the rivers draining the Kurukshetra area have their beds pebbly and stony in the submontane Bhangar Other alluvium fans constituting the tracts of Khara) (Kharar), and Morni, lying at the foot of the Siwaliks between the Ropaḍ (Rupar) and Pāoṭā gorges through which the Sutlej and Yamuna, respectively, debouch into the plains. Hence a people living in the Morni *ilaqa* during a pre-Rigvedic period must have coined the mame 'Drishadvati' in an Indo-Aryan language, as the name suggests, and from them the Rigvedic people must have

later borrowed it, while the two communities must have come into the contact of each other. It is one of these numerous points that goes to suggest the presence of a pre-Vedic Indo-Aryan community in the Gangetic valley { 105, 119-I }.

143-I. We have seen how there is a probability of the tradition of the Puranic geography of Kurukshetra going back to the period when the *Mahabharata* was practically complete { 104-I }. No any Buddhist place is mentioned, nor is there any even indirect reference to it in the contents of both the Vana and the S'alya parvas. We have already noticed that the name of such Buddhist and Mauryan cities as Pataliputra, etc., are unknown to the Mahabharata. The antiquity of this geographical tradition thus goes back to the pre-Buddhist times, which in other words is the accepted protohistoric period of the Indian history. The stories connected with various places on the Sarasvati recorded in the *Mhb* appear to convey some useful historiographic information, for instance, the story of Naimisha forest, states that during the Krita or the earliest era, the southern bank of the Sarasvati was studded with towns and cities and indicates a phase of the advent of the Vedic people into the region { 125-I (II) }. Kuru who lived 29 reigns before Adhisimakrishna, is stated to have first cultivated the land of Kurukshetra. The land must have been left uncultivated by the exodus of the earlier people as a result of the catastrophe that brought about the disappearance of the Sarasvati. The Mahabharata speaks of the consequences of the catastrophe, but says nothing about the catastrophe itself. Fortunately enough, account of the catastrophe is found in the Ramayana { 125-I, 35 }. During the reigns of Daśaratha, Raghu, Dilipa, Sudās, Dushyanta, Sagar, Māndhāta, etc., the Sarasvati appears to have been in its first stage { 105-I }.

144-I. The archaeological researches by Tessitori { 135-I, 18 }, A. Stein { 135-I, 25 }, H. Goetz. [*The Art & Architecture of the Bikaner State*. OX, 1950], R. C. Agrawala [*Artibus Asiae*, XIX, I, pp. 61] Hanna Rydh { 145-I, 42 }, and others, have demonstrated that predominately Bhāgavatism, and some Saivism [Shah, U. P., ' Terracottas from former Bikaner State, *Lalit Kala*, VIII, 1960, pp. 55-62 : Agrawala, V. S., ' The Religious Significance of the Gupta Terracottas from Rang Mahal ', *Lalit Kala*, VIII, 1960, pp. 63-68] and Buddhism flourished in the middle Sarasvati basin during the early centuries AD. A comparison between this state of affairs and the picture that we get from the Mahabharata present two different aspects of the Indian religion. A study of the descriptions of the tirthas on the Sarasvati and adjacent areas we find in the Mahabharata, shows that out of some 48 shrines 13 were dedicated to Brahmā, 11 to the menes, 8 to Vishnu (the incarnations of the Boar and the Dwarf), 7 to S'iva (including one of Sthanu Siva), 2 Karttikeya, 2 Varuna, 2 Surya, 1 Marut, 2 Agni, 1 S'ri, 2 Gaṇapatyas and 3 to the Mother-goddess. The religious conditions depicted in the Vana and the S'alya parvas appear to have prevailed during the middle of the second millenium BC, and it was approximately this mileiu reflected also by the Atharvavedic hymns, into which the Vedic cult made its intrusion from the west { 117-I }. It was indeed that very Āgamic religion descended from the Indus culture religion that belonged essentially to the Animistic Horizon.

145-I. The location of Vinaśana { Fn 25 } is still a problem. Hanumāngarh (Bhaṭner, Raj.) has generally been identified with this place { 135-I, 8 }. If our location of the Sapta-Sārasvata in the Hanumangarh-Anupgarh area on physiographic ground is correct, Vinaśana in that case, would require to be placed eight stages westward from the vicinity of Anupgarh, that is roundabout Derawar Fort in Cholistan (Bahawalpur, Pakistan), where the Hakdo turns southward. It is stated in the *Mhb*. { 125-I, (4) } that the Sarasvati became invisible

Plate II



The Dry Bed of Chautang (Drishadvati) at Nohar



The Nāli (Sarasvati) at Hanumangarh

(facing p. 92)

at Vinaśana, because as a consequence of her contempt for the Abhiras and the Nishādas or the S'udras. In the Mhb, Sabhā P. XXXII, 9-10, Nakula is said to have conquered the Abhiras on the banks of the Sarasvati and the Sindhu and in the Sabhā P. LI, 11-13, the latter are stated to have had their houses with gardens beyond the Indus on the sea-shore. They are described in the Mausala P. VII, 47-63, to have raided the women of the Yādavas of Dvārakā (Dvarāvati), whom Arjuna was leading to Hastinapur after their destruction and the submergence of Dvārakā. The eastern part of Kachchha now known as Vāgaḍa tract which is a stronghold of the Ayars (Ahirs) or the Abhiras, is referred to as the Abhira region in the Puranas [Vāyu, XXXXV, 115 : *Matsya*, CXIV, 40 : *Brahmāṇḍa*, Pūrv, II, 16, 17 : *Mārkaṇḍeya*, LIV, 47]. All these factors suggest that the Abhiras were living in the tract lying between the Sarasvati and the Sindhu, i. e. Suvira country, and were in command of the dried up channel of the Sarasvati which was used as a high road between the West Coast and the heart of Aryāvartta during the period of the Mahābhārata. The Nishādas or the S'udras were mainly a fishing-folk of the Austric hill people. The Māḍ plateau (Jaisalmer) is the westernmost area for us to find the Kolis and the Bhils [IG, XIV, Jaisalmer, 1551 animists, p. 4] as earlier inhabitants. It is from this area that the Nishadas and the S'udras could have reached the Sarasvati and that too, in the neighbourhood of Derawar Fort. In earlier times the bed of the Sarasvati must have been more southward than today in Cholistan. Old dry beds or wadis of former rivers are still to be seen along the fringe of Mād or Jaisalmar [Dasgupta, S. P., ' Evidence of Old Rivers in Jesalmer Desert, PIScC, III, Madras, 1958, pp. 252-3]. All these factors lead us to locate Vinaśana that marked the western border of Aryāvartta { Fn. 25 } of the post-Rigvedic period, in Khadal tract roundabout Derawar Fort.

146-I. Just as the Vedic people gave a new name to the Sarasvati, the pastoral tribes who occupied it during its third stage, also gave such new names in their turn to various parts of the Indo-Gangetic divide drained by the middle Sarasvati, as are unknown to the Puranas and the Epics. We have noticed that the plain overlooked by the Siwaliks between the Sutlej and the Ghaggar gorges at Ropaḍ and Chanḍigarh, respectively, is known as Kharaḍ (Kharar), and the one that stretches from Chanḍigarh to Paoṭā or Yamunānagar, is called Pawādh, which is bordered by the hilly Morni ilāqa in the Nahan Siwaliks. The doab that lies between the Sutlej and the Sarhind Choa is the desert tract known as 'Jangala', which in continuation with the contiguous Bāgaḍ (= jungle, compare, Guj., Vāgaḍ or Vagaḍo = jungle), a part of the Thaḷi desert of the northern and the eastern parts of the Bikāner division of Rajasthan including the Pohi tract, were all together came under the ancient Jāngala (uninhabited region). The ' Jangaladhara ' title of the Rāṭhor house of Bikaner refers to this old term. We find two different expressions for the Kuru country in the ancient literature, namely, ' Kuru-Jāngala ' in the *Mahābhārata* [Adi P. ICIV, 49], and the *Puranas* [*Vishnu* P. III, tr., Bhāg, I, 16-7, etc.], on one hand; and ' Kuru-Panchāla ' in the Vedic literature [Aitareya Br. VIII, 14 : Gopatha Br. I, 2, 9 : VI, pp. 165-9], on the other hand. Thus the Puranic literature (it includes the Epics in the future references) which professes to contain pre-Vedic accounts, associates the Kuru country with Jāngala, instead of with Panchāla, as the Vedic works refer. The Puranic term does not denote an ethnic relationship for Kuru was under cultivation since the time of S'antanu { 125-I, 10 }, and Jāngala (this term does not occur in the Vedic literature) was a steppe affording shelter to newly-coming semi-nomadic pastoral tribes without rulers (gaṇa). The compound term therefore seems to denote that both Kuru and Jāngala were under a single regime, i. e., the latter was under the kings of the former. The

term Jāngala does not occur in the Rigvedic, obviously because, the desert had not come into being during its period. There are references to *dhanvan* in the Rigveda [II, 38, 7; III, 45, I; IV, 17, 2, etc.], the term which according to H. C. Raychaudhuri means dry soil [*Studies in Ind. Ant.*; p. 137], may denote a remote desert, away from the abode of the Rigvedic people, probably the very area which later became known as Jāngala on account of desiccation, connected perhaps with the Twelve Years Draught of S'antanu's reign, as he had anticipated that the country might turn into a desert as a consequence of the draught. The term *maru* which has continued to our own times as the name of the Indian Desert, occurs first in the *Taittirya Aranyaka*, V, I, I. How and why the term *thaḷa* has come into vogue for the driest portion of the desert, characterised by the loftiest series of sand-dunes, remains to be investigated. Thus we have before us four terms denoting the desertland, namely, dhanvan, Jāngala, maru, and thaḷa. What type of the desert the term dhanvana meant, we do not know; but it appears certain that Jāngala stood for a steppe, as we can say in the light of the description of its vegetation and hydrography in the Mahabharata. Maru may denote an ordinary desert, the next stage in desiccation after that of the steppe. Thaḷ, as we all know well, occupies the driest portion of the Indian Desert. In Bikaner division this portion is exclusively known as the Thaḷi. It is difficult to ascertain how extensive the Indian Desert was during the days of the Mahabharata, i. e., 12-13th cent. BC { Fn. 22 }. " The flora of the Indian Desert ", writes G. S. Puri, " though apparently therophytic, contains a fairly high percentage of phanerophytes, which are of wide geographical distribution, there being very few plants endemic to desert areas. The plants have affinities with central India, with eastern India and quite a number are commen to arid regions of the country. This feature of flora seems to suggest that the desert is of comparatively recent age, which finds support from historical and other known facts about the area also " [*Indian Forest Ecology*, I, OX, 1960, p. 261]. More than one phases of desiccation are evidenced by archaeological and geographical research in the Ghaggar basin, as we shall see later.

147-I. The Bhāṭiaṇā and the Bāngaṛ tracts lie on either side of the Ghaggar. All these tracts, viz., Pawādh, Nardak (traversed by Sirsa branch of the western Jamna Canal), Jangal-Rohi-Bāgaḍ, and Bāngar-Nāḷi constituting the ancient Kurukshetra or Kuru country are bordered on the north-west by Mālwā and on the southeast by Harianā and is inhabited largely by the Jāṭ cultivators. It covers the districts of Ganganagar and a part of Bikaner in Rajasthan; Bhatinda, Ferozepur, Hissar, Karnal, Sangrur, Patiala and Ambala of Punjab; and large parts of Meerut, Muzaffarnagar and Saharanpur in U. P., occupying approximately an area of about 6,000 sq. mls.

148-I. Kuru and Panchāla were separate kingdoms. However, the use of the compound term ' Kuru-Panchāla ' in the late Vedic literature, seems to be due to the patronage of the two contiguous kingdoms afforded to the Vedic priesthood, which appear to have come from the Middle East { 117-I, 121-I }. The story of Daivya-vaka { 125-I (18) } is interesting in this respect { 125-I (18) }. He was a Vedic sage who unsuccessfully tried to induce the kings of both Kuru (Dhritarāshṭra) and Panchāla towards the Vedic cult. This, together with the story of Devāpi and S'antanu { 125-I, 10 }, suggests that the Kuru kings of Hastināpur did not practice the Vedic cult and the Vedic priests were making all efforts to get the priesthood of the Kuru and other Puranic dynasties by overcoming the strong resistance offerred by the traditional priesthood. The heroes of the Mahabharata had not thus come under the influence of the Vedic cult. The story of Krishna's lifting up of the mount Govardhana in

order to save the people of the S'urasena country or Vraja from the downpours caused by the Vedic god Indra, and the story of the Pārijāta (*Harivamśa*, II, 64–75, etc.) show unsuccessful attempts of the Vedic priesthood to establish their hold in the middle Doab. It was from the time of Parikshita [*Atharvaveda*, XX, 127–9, etc.] that the Vedic priesthood began to gain ascendancy at the court of the Kurus of Hastinapur and the process was completed during the period of his successor Janmejaya (III) Pārikshit {125–I, 3}. One can understand the indifference of the Vedic writers to the heroes of the Mahābhārata. These two are the earliest Kuru kings who find the references in the Vedic literature after a mention of S'antanu in the Rigveda, X, 98. "In the south", writes H. C. Raychaudhuri, "Rigvedic poets refer to a region called the Dakshiṇapadā. The exact significance of this term is unknown.................. In the next period, viz., that of the *Yajus* and *Atharva* samhitas, and the earlier *Brāhmaṇas*, the Aryan (Vedic) occupation of the Gangetic Doab was campleted. In the eastward expansion (of the Vedic cult) the lead was taken by the Bharatas and the Videghas........The later *Brāhmaṇas*, *Āraṇyakas* and *Upanishads* introduce us to a geographical area not much different from that of the later Samhitas, except in regard to a few particulars. We now hear for the first time of the great Dakshiṇa- parvata [*Kaushitaki*, II, 8)........ a glimpse of India with its five-fold divison :- the Dhruvā – Madhyamā Pratishṭhā diś (Middle Quarter, the Kurus the Panchālas, the Uśinarās, the Vaśas, etc.), the Pratichi diś (the Kosalas, Kāśis, Videhas, Magadhas, etc.), the Pratichi diś, the Udichi diś. The division is already anticipated by the Atharva Veda, XIX, 17, 1–9" [*Studies in Indian Antiquities*, 1958, pp. 57–9]. What we are given to understand by the term 'Aryan expansion in India', as interpreted from the contents of the Vedic literature, was, as we find in the course of a new study of the data, mainly the expansion of the Vedic cult and supremacy of the Vedic priesthood that won the patronage of the ruling houses, and not generally the following of the people at large. The Vedic ritual was indeed a costly affair being beyond the reach of the common man.

149–I. Although the river below the confluence at Rasauli is marked in our maps as Ghaggar, it was formerly called the Sarasvati [*Panjab Gaz.*, Hissar], and that name is still popular among the people. The famous fortress of Sarsuti or Sirsa was built upon its banks about 100 miles below Rasauli. Some 7 or 8 miles east of Sirsa lies another old bed of the Sarasvati. This is partially obliterated. It is possible that the Jamna may at some remote period {first stage, 104, 105–A} have taken a westerly instead of an easterly course, and joined the Hakdo [Oldham, R. D., JASBeng, IV, p. 335]. "According to the Harivaṃśa-purana, the Yamuna flowed by Mathura when Krishna in his youth amused himself on its banks and Baladeva dragged the river out of its course by digging an irrigation canal. It is most likely that the legend recorded in the Mahabharata of the S'atadru having split up into a hundred channels when Vaśishtha threw himself into it, was founded upon some great changes in its course. The traditions current throughout the tract between the Sutlej and the Sarasvati all agree that until Mohemmedan times, the Sutlej flowed into the Hakdo channel, and till then, the country upon its banks was quite fertile and populous [Oldham, C. F., 'The Sarasvati & the Lost River of the Indian Desert', *JRAS*, 1893]. From the junction of its eastern and western arms near Wallur, the Hakdo traverses the Bhawalpur State. It here loses the name of Sotra and acquires that of Wahind ('the river of Hind'). It seems that the river in one of its changes joined the Indus near Uch. The original channel is, however, distinctly traceable onwards into Sind.... "After entering Sind, the Hakra turns

southward, and becomes continuous with the old river bed known as Nara. This channel which bears also the name of Hakra or Sagara, Wahind, { Purān } and Dohan { also Mihrān, Sana., Mahārṇava : in old folk literature of Gujarat it is called ' Mitho Mahrāmā ' or the ' Sweet Ocean ', for instance, in the story of Sonā and Halāman Jethvo }, is to be traced onwards to the Rann of Cutch. " [Oldham, C. F., ' The Sarasvati & the Lost River of the Indian Desert ', JRAS, 1893]

150–I. The Sarasvati flowed into the sea that formerly covered the Ranns of Kachchha. Kachchha whose structure consists mainly of the Gondwanas, the Traps and the marine Tertiary rocks and the surface is hilly and hard was an island in that northeastern arm of the Arabian Sea. This sea, separating the Saurashtra peninsula from the mainland in the western India, occupied the intervening lowland known as Bhāl-Nalkāṇṭhā (the tract surrounding the Naḷ lake which now represents the last relic of the hydrographical conditions that formerly rendered Saurashtra an island) in the form of a navigable strait and joined the Gulf of Cambay at its present head. Thus there was a continuous sheet and channel of water from the Gulf of Cambay to the heart of northern India { 89–I }.

151–I. The Indus or the ancient Sindhu takes rise from the glaciers of the Kailash overlooking the Mānsarovar lake. The river pursues a northwesterly course for over 500 miles through the Himalayas, when the Shyok joins it and after a flow for another 100 miles in the same direction, takes a southerly course which it maintains as far as its mouth. The drainage basin of the Indus is estimated at 3,72,700 sq. mls., and its total length is about 1800 miles. The towns of importance on or near its banks are Attock, Kālābāgh, Ḍerā Ismāil Khān, Miṭhānkot, Rohri, Sukkur, Moenjo Jhero (Mohenjo Dera), Sehwān, Hyderabad-Sindh, Koṭri, Karāchi, etc. After receiving as tributaries the Jhelum (anc., Vitastā), the Chenāb (Chandrabhāgā), the Rāvi (Irāvati or Parushṇī), the Beas (Vyāsa) and the Sutlej (S'utudri), the river forms a junction near Bahāwalpur known as the Panjnad [Panchanada, *Mhb*, Sabhā, XXXII, a sacred place]. The whole course of the Indus through the Punjab with the Sulaiman Range bordering it on the west, is broken by islands and sand-banks. It enters Sind near Kashmor and the Sulaiman Range is succeeded to the west, by the Kirthar Range. From Bukkur to the sea the Indus is known as the Dariyā (Pers. ' river '). Formerly in years of high inundations its floods reached the Manchhar lake by the way of Jacobabad. The Indus formerly flowed down the middle of the Thal desert. Basira was called Beṭ Basira (Bet = island; also in Gujarati, for instance, Chhāḍ Bet, Beṭ Dwārka; etc.) and at Shāhgarh near the southern end of the Thal, a long lake still exists which once formed the Indus bed. Unlike the Punjab plain, the plain of Sind is made up almost exclusively of new alluvium (Khādar). There are only two fixed sections in the course of the Indus in Sind, where it is intrenched in hard limestone outliers of the Kirthar formation, one is at Sukkur, and the other at Kotri. The delta of the Indus that was also formerly shared by the parallel-running Sarasvati, covers now an area of about 3000 sq. miles, and extended formerly eastward along the coast-line of the Grater Rann of Kachchha from the mouth of the Luni (now up to the mouth of the Kori Creek) to the Rās Muāri for about 350 mls. It is almost a perfect level, and nearly distitute of timber. In these respects the delta is similar to that of the Nile in Misr, but dissimilar to that of the Gangā. In 1800, the river at the apex of the delta was divided into two main streams, the Baghiār and the Sitā; but in 1837 it had entirely deserted the former channel. The Khedewāri passage also, which before 1819 was the highway of water traffic to Shāhbandar, was in that year closed by an earthquake. In 1897 the river suddenly cut 3 mls.

inland, north of Rohri. For the present, the Hajamro, which before 1845 was navigable only by small boats, is the main estuary of the Indus [*IG*, XIII, p. 361]. Sind would all be an empty desert or reed-covered swampland were it not for irrigation. The rainfall is less than 10″ near the coast and less than 5″ in upper Sind. No permanent settlements exist in Sind outside the Indus alluvial plain, except in Kohistan in the foothills of the Kirthar where springs in the narrow valleys give rise to little hidden oases [Ginsburg, N. S., *The Pattern of Asia*, Lon., 1958, p. 6479].

152–I. Bordered in the north by the base of the Pamir hub of the Asian mountain systems, in the south by the waves of the Arabian Sea and the Rann of Kachchha, separated in the west from the Pukhtun and the Baluch cordilleras by the Sulaiman–Kirthar range and bounded in the east by the Mālāṇi–Māṛ uplands of the Jaisalmer plateau skirted all around by the Bhi s (sand-dunes) and the ṭimbās of the Thaḷ or the Indian Desert, the valley of the Indus forms the western portion of the Indobrahmaputra Plain {36–I.} that, indeed, surpasses in area all other alluvial plains on the earth, exceeding even that of the Huang Ho in northern China [Ginsburg, N., *The Pattern of Asia*, Lon., 1958, p. 491].[29]

THE ROLE OF THE ALLUVIAL PLAIN IN THE HUMAN PROCESS AND THE INDIAN PLAIN

153–I. The location of the Indobrahmaputra Plain or the Indian Plain to use the general term: its rich alluvia together with a network of snow- and monsoon-fed perennial rivers, the geographical factors that have protected its major part from the effects of the Afrasian Desiccation and its often fluctuating climate ranging from humid in the east in the lower Gangetic and the Brahmaputra basins to arid in the west in the Indus valley; its flora that grades east–west from tropical rain forest to desert; its 'Oriental' fauna; adequate and easily-accessible mineral-supply as required to feed the stages of a pre-Industrial economy from the two adjacent rocky regions, the Peninsular India and the Extra-Peninsular region or the Himalayan Zone; its vastness characterized by the prevalence of varying ecological conditions as needed for all the socio-economic developmental stages of man, viz. gathering, pastoralism, horticulture and agriculture and related parasitic institutions, affording the least of chances for clashes between the communities largely on economic basis on account of its extensiveness which is effectively sheltered by the world's loftiest mountain range, the Himalayas, against the calamities that overtook in history a number of great peoples: etc., are such homoecological factors as may lead here the human process to achieve relatively a higher stage of the natural and unbroken development of communities and their synthesis in the direction of the unity of mankind, in comparison to what it may be possible in other great plains of the world out of which no other one possesses so many favourable environmental conditions. One of the main objects of this study is how far, if at all, this development could proceed in the light of history in the Indian Plain. The chief contribution of the alluival plain to the human process

29- There are five extensive lowland regions or great plains: the Antarctic Lowland is under the ice-cap; the Sahara, the world's largest desert; the desert-basin of Australia; the great South American Plain; and the Indo-Gangetic Plain [Philbrick, A. K., *This Human World*, NY, 1953, p. 66] Though this Plain is smaller than the structural plains of the Americas and northern Eurasia, in none of those continental plains is the continuous alluvial mantle as extensive as in India [Ginsberg, 1958, pp. 941–2].

has been mainly the growth of such higher institutions as urbanism, capitalism, state, imperialism, colonialism and all the rest that goes into the fourth and the fifth socio-economic stages { The Era of Regional Development and Florescance and the Era of Cyclical Conquests, respectively, 116-I } of culture-history, on account of higher agricultural yield for the production of which the alluvial plain affords distinctive facilities to the agriculturist through annual replenishment of the fertile soil on the flood-plains, adequate water-supply, the river as the means of water-transport which is both easier and cheaper than the land-traffic. But the pity of this development has been that it has proceeded on parasitic lines creating more and more economic and the consequent social inequalities with the result that the humanity has long been bifurcated into two clashing divisions, the suppressed rural food-producer leading a static life, and the parasitic urban suppressor who has been prospering at the expense of the former. The history of civilization so far has been largely an incessant conflict between these two artificial divisions and vast resources and energy that are being spent still on this account has been a loss to the proper human development. Minus this conflict the mankind would have been far more advanced and civilized in our times. However, the urban development that the alluvial plain has promoted has also proved to be a blessing in disguise. Freedom from the food-producing pursuits has enabled the dweller in the city developed in the alluvial plain to achieve much more in science, technology, aesthetics, thought and all the rest that come under the definition of civilization in the field of social sciences, than would have been otherwise possible to the human community as a whole. We have already noted that man has an inherent urge to hedonism which has till now been on the plane of parasitism {58-I, 3, VII}. The mechanics of urban development in the alluvial plain discloses in the light of its history as we have understood it, an irresistible and deep-seated urge in man for competitive progress for the fulfilment of which he often resorts to foul means when he fails to achieve it by fair means. With every member of the community working himself for producing his subsistence, no such great strides in science and technology as the development of nuclear energy, astronautics, cybernatics, etc., could have come so early as we witness in our times. It is this clash between the rural and the urban in history which has led us to find out what is the fundamental right of the individual as a component of society.

154-I. The Indobrahmaputra Plain owes its origin and physical development to the two parental blocks { 36-I }, more so to the Himalayas, for a far larger a part of alluvia is derived from them through the agency of the three river systems. Forming an offshoot of the Pamir Knot of the Asian orography,[30] the Himalayan mountain, together with all its adjacent and contiguous ranges, belongs to the Cainozoic mountain-building (orogenic) revolution which upraised a large part of the floor of the Mesozoic Tethys Sea into an

30- The ancient conception of the orography of Jambudvipa which forms a prescribed chapter in the Puranas { 126-I } tallies well with this generalization of the Asian mountain systems. " The earth ", according to the Vishnu-P., II; 2, " consists of seven islands, Jambu, Plaksha, S'ālmali, Kuśa, Krauncha, S'aka, and Pushkara. Jambu (dvipa) is situated in the centre of all these and in the centre of all these and in the centre of that island is situated the golden mount Meru which has four arms. Out of these arms, the Mandāra extends eastward; the Gandhamādana, the Kailāśa and the Himavat (Anc. Ind name of the Main Himālayas) stretch out

(Contd. on Page 99)

extensive fold-system, that stretches from the Pacific to the Atlantic, partly suboceanically
and partly on the surface (the Alpo–Himālayan chain).

155-I. From the Pamir Knot, the Roof of the World, that borders the Indus valley
in the north, radiate there, like an octopus, the Alai mountain to the northwest: the
Tien Shan ('Golden Mountain') northeastwards; three-fold Himalaya ['Himavant' *RV*, X, 121,
4: *AV*, XII, *YV*, *Taitt.*, V, 5, 11, 1: Vajasaneyi, X XIV, 30; etc. 'Himavān', *Mhb*, Adi, XXX, 18:
Sabha, XI, 89: Vana, CXXXX, 24-27: 'Himavat', *Matsya* XIII: *Harivams'a*–P. 1, 18, etc.: the term
'Himalaya' occurs in Kalidas, *Raghuvams'a*, IV, 78] or the 'Abode of Snow' that begins from the
Nanga Parbat in the form of an arc divided by geographeres in an east–west order into the
Punjab Himalaya between the Indus and the Sutlej; the Kumaun Himalaya, up to the Kali;
the Nepal Himalaya from the Kali to the Tista, a tributary of the Brahmaputra; and the
Assam Himalaya between the Tista and the Brahmaputra, from where the mountain curves
southward into the Patkai-Arakan Yoma range and then runs suboceanically towards the Pacific:
and the mountain girdle or festoon formed by the south and westward– running chains of
the Hindkoh (the Afghan official name for the Hindu Kush), Elburz in the north and the
Sulaiman-Kirthar (the Kirthar range subsides under the Arabian sea and turns west suboceani-
cally to reappear as the Oman Range in the Arabian Peninsula) in the south, branching off
again in the Pukhtun cordilerra in the form of the Makran ranges and the Zagros and then
embracing such inland drainages now drying up as the Hamun-i-Mashkhel into which the
Tahlab falls, the Helmand depression in Seistan or ancient 'Sakasthan, the two Iranian *dashts*,
the Lake Rezaieh, etc. { 6-I }, both reunite at the Mount Ararat in Armenia (anc. Urartu), the
second highest point in Western Asia (16,920), the Biblical scene of the landing of Noah's ark
[*Genesis*, 8, 4-5].

156-I The Indian Plain though ends in the east and the west with the mouths
of the Ganga and the Indus, it has been found in oceanographic surveys to be extending
further under the waves of the sea. " If, as seems possible, the submarine Murray Ridge,
"observes Seymour Sewell," is in continuation of the Kirthar Range of Sind, then this too is
of Tertiary age. In this connection it is interesting to note that the line of the Murray and
Charlsberg Ridges together forms an exact counterpart of the line taken by the Great Rift
Valley system of Africa, the long straight line of the West Coast of India is the result of an

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towards south ....; the Supārśva runs to the north; and the Mānasottara lengthens
to the west [*Vāyu–P.*, I, 34]. At the end of the Mānasottara range is situated
the city named Suṣā, which is the capital of god Varuṇa [*Matsya–P.* CXXIV],
who presides over the cardinal point the West and is the deity of the Paśchima
Samudra or the Western Sea ...... ". The first country south of Meru and the
Himavat is Bhārata. North of Meru is Ramyaka, next to that is Hiraṇmaya
('golden ' = 'Tien Shan') and beyond lies Uttara (northern) Kuru [*Vishnu–P.* II, 2].
On the basis of the identification of this ' Suṣā ', with the Elamite capital ' Susā ',
the Mānasottara appears to stand for the Hindkoh–Elburz–cum–Sulaiman–Zagros
mountain girdle and the Meru for the Pamir Knot [Pandya, A. V., ' Gujarat &
Assyria, *JGRS*, VI, 4, 1944; ' Some Ancient Cities in Iraq ', *VVRB*, I, 1, 1957].
The absence of the Sarasvati as a flowing river and the region of the Mānasottara
range referred to as Sāka-dvipa (' the Doab of the S'akas) in the Puranic geogra-

(Contd. on Page 100)

extensine scarp-faulting.. it is supposed to have assumed its present form probably in the Pleistocene period .. the deep gulley of the Murray Ridge system may perhaps be itself a line of faulting or alternatively the now drowned continuation of the old Tertiary bed of the Indus river or its precursor the Siwalik or Indobrahma river of Pascoe and Pilgrim." [Sewell, Sir R. B. Seymour, 'The Oceans round India', *Field Sciences of India*, Cal, 1937 pp. 24-5]. "The date of the origin of the (Western) Ghats." writes Spate, "is one of the major unresolved problems of Indian geology. There is palaeontological evidence for the existence until late Jurassic times of a landbridge (Gondwanaland) separating the area of the Arabian Sea from a sea which connected South Africa and Madagascar with the East Coast of India.. The view that the Ghats have been formed by the subsidence of a land-mass to the west {the absence of deltas on the Narmada and the Tapti is one of the evidences-autheor} seems to be supported by the absence of any evidence for a simple East-wards tilting of the whole block ..The wide mature valleys of the East-flowing rivers are on the whole graded almost to their heads, nearly in sight of the Arabian Sea; the contrast with the youthful gorge-like forms of the West-flowing streams is very striking..It seems unlikly, therefore, that the origin of the Arabian Sea could be much before Pliocene, possibly as late as early Pliestocene {when man makes his appearance on the earth-author} [Spate: O. H. K., 1954, pp. 8-9]. The Indus Delta has been advancing into the Arabian Sea at the rate of some 12' annually as General W. Haig calculates [*The Indus Delta Country*, 1894, Lon. p. 12], and 60' during prehistoric times according to M. B. Pithawalla [*Settlements in the Lower Indus Basin*, Kar, 1939, p. 339]. Off the Ganga also is a submarine trough corresponding to that of the Indus [Krishnan, M. S., 1953, p. 84]. The main feature of the lower Ganga is that the river has cut across the great Mid-Indian Orographic Complex (Shillong Plateau+Hazaribagh Highland +The Pats+the Maikal+the Mahadeva+Satpura) {41-I} through what is known as the Garo -Rajmahal Gap, which continued to be under the waves of the enlarged Bay of Bengal of earlier times down to a greater part of the Pleistocene [Hora, S. L., 'Tectonic History of India and its bearing on Fish Geography,' *JBNHS*, LII,4,1955, p. 659]. "The third division of India-the Indo-Gangetic plain..." obserues D. N. Wadia, "though of great interest from human view point as the source of great agricultural wealth, as an underground reservoir of fresh water and as the principal theatre of Inda's chequered history since the advent of the Aryans (when the Aryan came to India, probably this section of Aryavartta was not complete

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phy, the silence of the Puranic accounts about the Hakhamanish (Achaemenid) dynasty, c. 700-331 BC, and their knowledge of the Assyrians (c. 3000-604 BC) under the name Asuras, this name corresponds with the original term Ashur {107-I}, go to suggest that the Puranic conception of the Asian geography dates back to a pre-Achaemenian Assyrian period, when the desiccation had advanced in the Asian interior to the degree that the Inner Asian pastoral communities like the Sakas or the Scythians began to occupy Iran, where they founded their capital Sakis in the seventh century BC [Danied, G., The *Scythians*, Lon, 1958, pp. 24-5, 154]. According to an old Jain work the Kālakāchāryakathānka, the S'akas were in Sakasthāna or Seistan [Rapson, E. J., The Cambridge Hist. of Ind., *CHI*, I 1955 pp. 290] in the 1st cent BC before they entered India by the sea and conquered its western and central portion. [*CHI*, *I*, pp. 149-50]. We have more than one traditions about the ancient Indian conception of the world geography about which we shall speak later.

for habitation-for large parts, especially of Bengal) its importance as a geological unit is only secondary" [*The Making of India*, Pres. Add., 29th session. Ind. Sc. Cong., 1941, p. 9]. On leaving the Garo-Rajmahal Gap the Ganga gives off numerous spill channels, which unite to form important waterways in the delta, like the Hooghly, Bhāgirathi, Jalangi, Churni, Bhairab and Matabhanga. The deltaic waters of the Ganga have wandered recently from the west to the east. The seaward margin of the delta is the Sunderbans which has been advancing slowly at the rate of 1 mile in 40 years [Sewell, R.B.S., 1937, p. 29], as is suggested by the presence of raised beaches in this area. The rate of the advance of the deltas of both the Indus and the Ganga furnish us a clue to locating their latitudes in early times, for instance, during the periods of the neolithic and chalcolithic (Indus, etc.) cultures of these river valleys, the periods of the microlithic cultures of Birbhanpur near the Gangetic delta and of the Qila-Gulmuhammod I as well of the pre-Indus Zhob-Amri-Kot Diji-Kalibaggan-I Complex of the Indo-Sarasvati basin.

PREHISTORIC LAND-BRIDGES IN THE BAY OF BENGAL AND THE ARABIAN SEA

157-I. That land-bridges in some form or series of islands situated within the range of accessibility to the primitive type of boats, like double-canoes of some of the indigenous inhabitants of the Pacific islands, existed well into the human period in the Indian waters, is a fact on which some light has been thrown by researches in oceanography[31] and Cainozoic geology. The subject is mainly connected with the history of the Himalayas and the Indian Peninsula, submarine prolongation of the Indian Plain at both its ends, that means also evidently the prolongation of these two parental blocks. The mountain systems of the Cainozoic orogeny occupy the seismic or Earthquake Zone of our planet. It is a belt of instability and weakness in the crust of the earth characterized mainly by volcanoes. The Zone rises in the Antarctica and passing through the west of the Americas, the east coast of Asia via Kamchatka, the Kuriles, Japan, Bonin Islands and the Philippines, it reaches the East Indies. Here the Zone is bifurcated; one offshoot proceeding through New Britain, the Solomons, New Hebrides, the Tonga Islands, New Zealand and back to Antarctica; and the main Zone stretching across the Island Arc, the Nicobar and the Andaman Islands in the Bay of Bengal, then it enters continental India and runs along the Arakan-Patkoi Range that curves westwards in Assam into the Himalayas. One of them is called the Circum-Pacific Zone; and other one, the Alpine-Mediterranean-Trans-Asiatic Zone [Bertin, L., *The Earth*, Lon, 1961, pp. 170-2]. Southeast Asia is regarded as the great semi-submerged platform named the Sunda Platform [King, L. L., *The Morphology of the Earth*, Lon, 1962, pp. 498-500]. " If we examine a geological map of the Tethyan geosynclinal belt from Iraq, " writes M. S. Krishnan, " through Iran, Baluchistan, Himalaya and Burma to the Indonesian archipelago, we see that the general direction of the Iraq-Persian Gulf region points directly towards Sumatra and is continued by the Indonesian arc " [Krishnan, M. S., *The Structural & Tectonic History of India*, New Delhi, 1953, p. 90].

31- Sewell, R. B. S., *Geographic & Oceanographic Research in Indian Waters*, *MASBeng*, IX 1925-35; *Scientic Report of the John Murray Expedition*, 1933-4, Brit. Mus., 1935; 'Pan India Ocean Science Congress', SC, XVI, I, 1951, pp. 452-4; Correa, J. P. 'A New Look at the Indian Ocean', *Illustrated Weekly of India*, 20th Dec., 1964; 'The Indian Ocean yields up its Secrets', *Stateman*, Cal., 6th Dec., 1964, I-IV.

158-I. " The fall of the sea-level in the last Glacial Period (Würm) ", states Sewell, " seems to have had a particularly marked effect on the region of the Malay Archipelago. Prior to this epoch a large area of dry land extended to the southeast and included the islands of Sumatra, Java and Borneo, all of which were connected together and formed a part of the Asiatic continent. A little further to the southeast a second large area of land (Sahul) extended northwards from Australia. During the lowering of the sea-level, much of these two areas became eroded and peneplaned, and when at the close of the epoch the sea-level again rose, this peneplaned area became drowned, thus causing the separation of the various islands and giving rise to the extensive shelf areas that exist at the present day. Still later and probably not more than some 4000 years ago, a second, though smaller, fall of sea-level occurred throughout the tropical belt of all the great oceans, possibly as a result of an accumulation of ice in the Antarctic continent. On this occasion the sea-level fell by only about 7 metres and the result can be seen clearly around the continental coasts in the form of 'raised' sea beaches; but the most important result of this fall was the effect that it had on coral reefs. Coral can only grow up to sea-level and the fall of this level brought the topmost parts of the reefs above water and thus gave rise to the islands, composed of coral rock. " [Sewell, S., 1937, pp. 27–8]. Glaciation influenced the human life in one more way. The volume of water locked up in glaciers and ice-sheets can lower the general sea-level of the world. " It has been calculated that at the height of the greatest glaciation of Pleistocene times the sea-leval may have fallen up to 400', while during the last (Würm) glaciation it fell by well over 200'. Should the present remaining ice-caps melt (as they show some signs of doing so), the oceans might rise as much as 165', though it would probably be somewhat less. Such considerable falls in sea-level during the Ice Ages undoubtedly led to the emergence of land-bridges between areas now isolated, enabling men and animals to move freely between them. A bridge linking Alaska with Siberia has already been mentioned; others may have united Japan with the main land of Siberia; Tasmania and New Guinea with Australia, while Borneo, Java and Sumatra are all likely to have been made one with Malaya by the exposure of the Sunda Shelf. There is archaeological and zoological evidence to suggest the Celebes and Philippines were linked with the Asiatic mainland not through the Sunda Shelf group, but northward through Formosa. " [Hawkes, Jacquetta, 'The Natural Stage ', *HM*, I, 1963, p. 24]. The relics of the Pleistocene colonists, as old as 14,000 BC, have been found in Australia on the Lake Menindee and the river Maribyrnong [Mulvaney, D. J., 'The Pleistocene Colonization of Australia ', *Antiquity*, XXXVIII, 1964]. Recent assessment of Pleistocene sea-levels made by R. W. Fairbridge ['The Chaging Level of the Sea ', *Scientific American*, May 1960] and C. A. Cotton ['Low Sea – Levels in the Pleistocene ', *Trans. Roy. Soc. New Zealand Geology*, I, 1962] allow for a lowering of the sea-level by 750' around 14,000 BC, and considerably more a little earlier, and Australia and Tasmania were connected with the Asian mainland. It has been estimated that mean sea-level is at present rising at the rate of about 10 cm per century [Sewell, R. B. S., 'Oceanographic Work in India ', SC, XVII, 4, 1951, pp. 145].

159-I. The contribution of the Himalayas to the human process does not confine itself to obstructing the cold Polar winds and the SW Monsoons; to saving the major part of India from the Afrasian desiccation; and lastly, to affording such an effective protection and defence to the human process in this subcontiment as should normally allow the latter to pursue its course essentially unbroken and continuous; but the great mountain appears also to have

facilitated the ethnic movements between Eurafratian land-block, on one hand, and Australia and the Occnia and the Americas, on the other hand, whenever, glacial and other conditions may have allowed its submarine parts to emerge above the sea, either in the form of land-bridges suited for land travel, or in the form of continous chains of islands and islets located conveniently to permit the primitive navigation such as still practised by the Pacific islanders.

160-I. Still there are scholars who rule out early inter-continental ethnic movements through such lands and corridors as are non-existent today. However, the more we pursue our studies in early migrations, the more do we find ourselves confronted with such problems as are, at least *primo facie*, difficult of explanation in the terms of the present distribution of land and sea on the earth. The issues of this nature emerge, indeed, with the oldest known material culture of the mankind. The Handaxe-tradition of the Palaeolithic technology, whose distributional pattern suggests a central African cradle, spread gradually over Africa, Europe, and Western Asia by the Middle Pleistocene (c. 2,00,000 — 1,00,000 BP); but failed to cross the Iranian Plateau, beyond which in the northern India lay a theatre of a different contemporary tradition of the 'Chopping-Tools', ascribed to the Pithecanthropus erectus in the light from Java and China [Howells, W., 'Pithecanthropus and Sinathropus', *Human Evolution*, NY, 1959, pp. 236-250]. In the southern India, we find under insular circumstances the occurrence of the Handaxe-tradition migrating northwards in the world of an oriental Chopping-tool tradition, which had its earlier development on the banks of the prehistoric Indobrahma river {6-I} during the second-Glaciation (c. 2,00,000 - 1,50,000 BD) of the Alpo-Himalayan Pleistocene sequence. The phenomenon of such an insular presence of the Handaxe-tradition poses the problem of its direct entry into the southern India. Coon surmises, "......they reached India, presumably by way of the narrow-zone of the warm climate stretching along the Persian shore of the Indian Ocean". [Coon, C. S., *HM*, 1962, p. 59-60]. Here Sewell's findings that the faulting-down of the Makran coast continued [Sewell, R. B. S., 1937, p. 25] into the late Pleistocene, the period during which the Palaeolithic communities were at the climax of their achievements, fit better than those of Coon. However, the real question remains unanswered, because the South Indian Handaxe-Culture of African facies moved from the far south roundabont Madras to the north, and in this condition its advent into India requires to be sought further south [for A. C. Logan's discussion, *Old Chipped Stones of India*, Cal., 1906, pp. 73-5]. We have already noted 'the Negro Enigma' in which India is surmised to possess a meaningful central position in the distributional range of the Africanoids [84-I]. Some inexplicable descrepancies occur also in connection with some post-Glacial cultures, for instance, the Thelis microblade industry of the Tamraparni basin in the Tirunelveli District, Madras State, which though shares common features with the same industry of Sri Lanka, shows no generic relationship with other lithic technics of the same catagory. "A distribution map", observes V. D. Krishnaswamy, "depicting the pointed butt polished axe, characteristic of a neolithic age in India, shows the grouping in two clusters, viz. in South India (particularly concentrated in the Karnātaka region) and in East India. They are absent in both the coastal regions. From a superficial resemblance of these pointed butt axe in the Karnataka and Eastern India, a north-east to south-west movement has been suggested for the neolithic axe culture. This is further supported by Haimendorf's Munda hypothesis that a late neolithic civilization with eastern affinities and associated with the same form of Austro-Asiatic tongues permeated the older population of Deccan". ['The Neolithic Pattern of India', PISC, 1959, Pres. Addr., Delhi, p. 14]

wild cotton, *Gossypium arboreum*, has 13 small chromosomes. American wild cotton, including Gossipium raimondii, from which many botanists believe the domestic forms to be in part derived, has 13 large chromosomes. The cultivated East Indian cotton is merely an improved form of the local wild species, with the same chromosome count. The evidence for its local origin is therefore impeccable { Vavilov also locates its origin in his 'Indian Center, Eastern Part,' 19-I, 2, 'tree cotton,' 'oriental cotton' }. The cultivated American cotton of the later Peruvian levels, *Gossipium barbadense*, contains 26 chromosomes, 13 large and 13 small. Specialists in commercial cotton - breeding believe that *barbadense* is a hybrid between wild American and cultivated East Indian cottons. If this is so, some one brought cotton on a ship across the Pacific before 2500 BC, for the cotton from the lowest levels in Huaca Prieta is the same in colour and other characteristics as that of higher levels. The alternate hypothesis, that some one carried cotton across the Atlantic, is equally difficult to defend. The sweet potato, *Ipomea batatas*, a native of the tropical forests of South America and unknown in Europe before the 16th century, it was grown on the coast during the period that began after the introduction of maize and pottery. When the first European navigators reached Polynesia they found it cultivated there, particularly in Hawaii, Easter Island, and New Zealand.

165-I. "If Indian cotton and the gourd," states Coon," were carried to Amirica by sea from Southeastern Asia before 2,500 BC, then the people who brought them must have been Neolithic navigators, for the Bronze Age had not yet begun in Southeast Asia at that time. Sweet potato, ipomea batatas, a native of the tropical forests of South America and unknown in Europe before the 16th century, it was grown on the (Peruvian) coast during the period that began after the introduction of maize and pottery. When the first European navigators reached Polynesia, they found it cultivated there, particularly in Hawaii, Easter Island, and the most remote archipelago of all, New Zealand. The Polynesians called it by one of its South American Indian names, *Kumara*.. Thor Heyerdahl postulates [*American Indian in the Pacific*, Lon, 1952] that some American Indian navigators from the coast of Peru may have reached some of the Polynesian island either before or soon after the arrival of the principal ancestors of people..I prefer Heyerdahl's alternative as a working hypothesis because in 1953 he found pre-Columbian Peruvian pottery on one of the Galapagos Islands and in 1960 in Easter Island, where it was pre-Polynesian [Coon, C., *op. cit*, p. 357]. The signs of the Rongo-Rongo hieroglyphic tablets found in Easter Island, have prompted some speculations, for they bear striking external resemblance to the signs of the Indus Valley script of Harappa and Moenjodero [Hevesy, W. von, 'Osterinselschrift und Indusschrift,' *Orientalist*, 1934, Friedrich, J., *Extinct Languages*, Lon, 1962, pp. 170-3 : also N. M. Billimoria]. But the antiquity of the past of the Easter Island hardly takes us back to the Indus times.

166-I. "A direct diffusion from Malay to Polynesian waters," writes Thor Heyerdahl, "is not in accord with the genetic evidence of Polynesian blood.. Nevertheless, their language is somehow related to the Malay tongue, and a combination of all known facts makes it possible that the present Polynesian stock, including the third-epoch Easter Islanders, reached their present area from Eastern Asia." [*Aku-Aku*, Lon, 1960, p. 338]. "Man did not originate in America," states J. Alden Mason, "Trans-oceanic migrations to America have always been a favourite creed to those with the will to believe, but until quite recently anathema to all reputable American anthropologists, they still are too many or most. No theory of trans-Atlantic migration has ever received any consideration from scientists of repute.. However, ignoring the mythical 'Lost Continent of Mu', evidence of trans-Pacific contacts are strong

enough to be almost convincing to many good anthropobgists. Their time, extent, route, nature, and effect are still so little known that no cogent, comprehensive picture of them has yet been proposed. But there are many curious and close resemblances in cultural elements between several regions in mainland America and Polynesia, Malenesia, and Southeastern Asia that are difficult to account for on other grounds than historical contact. [Ekholm, G. F., 'Is American Indian Culture Asiatic ?', *Natural His.*, LIX, 8, 1950, pp. 344–51]. The place of the Polynesians is of course a very important one in this question. There are many cultural resemblances between Polynesia and America, the physical type of the Polynesians, their language, and the fundamentals of their culture connect them with south-eastern Asia rather than America, and there is little doubt that they originally came from the Malayan region at no very remote period" [*The Ancient Civilizations of Peru*, Lon, 1957, pp. 20–3]. "The process of diffusion," states E. W. Haury while summarizing the progress of archaeology in the Americas, "on an interhemispherical basis has undergone recurrent examination. The present cycle has been stimulated in parts perhaps by Heyerdahl's crossing of the Pacific from Peru to Polynesia on a balsa raft. Early attempts at establishing Asiatic American cultural relationships were mostly in the nature of matching traits without being overly critical of geographic locality, the clustering of elements, and chronological problems....An attack on this general question is represented by a series of papers [Smith, M. W., ed., *Asia & North America – Transpacific Contacts*, Mem. 9, Society for American Archaeology, Supplement to *American Antiquity* XVIII, 3, Pt. 2, 1955]. The topics range through problems of prehistory within Asia itself, considerations of Aleutian and Alaskan archaeology....it seems worthwhile noting especially the credible and sought–for link that the Norton ceramic complex of the western border of Alaska erects between the pottery of eastern Asia and eastern North America [Griffin, J. B., 'Preliminary Statement on the Pottery from Cape Denbigh, Alaska,' *A & N A*, 1953,]; the reassertion of the value of botanical evidence as an indicator of trans-Pacific diffusion [Carter, G. F.,' Plants across the Pacific, A & N A, 1953]; and finally, G. F. Ekholm's hypothesis ['A Possible Focus of Asiatic Influences in the late Classic Cultures of Mesoamerica,' A & N A, 1953] of a focus of Asiatic influences on western borders of the Maya area. An impressive array of analogies, called complex A, has been brought together, including the trefoil arch, sanctuary within a temple, sacred tree, tiger thrones, lotus staff, lotus thrones, lotus panels, conch shell with plant [Vokes, Emily H., 'A Possible Hindu Influence at Teotihuacan,' *American Ant*; XIX, I, 1963, pp. 94–5], court scenes, colonnette decoration, gallery structure, Atlantean figures, phallic cult, monster doorway, Chac mool, serpent columns, seated lion or tigerss, diving god, serpent dieties, sun disc, copper bells, and Vishnu figure." [Houry, E. W., 'Archaeological Theories & Interpretations,' *Current Anthropology*, Chicago, 1956, pp. 126–7 : Covarrubias, M., *The Eagle, the Jaguar, and the Serpent*, NY, Alfred A. Knopf, 1954 ; Rands, R. L., 'The Water Lily in Maya Art : A Complex of Alleged Asiatic Origin,' A & N A, 1953 : Heine–Geldern, R. von, 'Die Asiatische Herkunft der Süd amerikanischen Metalltechnik,' *Paideuma*, Milleilungen zur Kulterkunde, Band 5, Heft 7/8, Bamberg].

167–I. Now let us turn from America to the Pacific Basin. Here Australia has yielded palaeoliths from deposits carbon – dated c. 14,000 BC, approximating typologically those of the Middle Palaeolithic or Mousterian types of Europe found often associated with Neanderthals as we have already noticed; Borneo has given us about the same type of the relics styled 'Mid–Sohan flake' in conjuction with the skeletal remains of *Homo sapiens*, dated c. 38,000

161–I. Turning from archaeology to historical linguistics, we find that P. W. Schmidt has shown remarkable connections between the Dravidian and the languages of Australia [*Die Sprachfamilien und Sprachenkreise der Erde*, 1936, p. 121], and H. Hamburger has recently pointed out certain basic linguistic features apparently common to the Dravidian and the Bantu languages of Africa ['Indians in Africa', *Man*, LVI, Feb., 1956]. The diffusion of the Austric languages comprising the Austronesian or Malayo-Polynesian and Austro-Asiatic (Cham, Proto-Malaccan, Khasi- Nicobar, Mon-Khmer, and Munda groups) divisions that display their traces and elements in the substructure of the Old Indo-Aryan (Vedic, Classical Sanskrit, etc.) languages of the Indo-European lingustic family, presents a similar issue. "The most striking feature of the languages of the Indonesian or Malayan group (of the Austronesian division)" Writes I. J. S. Taraporewala, "is their extremely wide extension. The islands lying eastwards of Sumatra lie within fairly easy reach of the boats of these islanders; but it is far more difficult to explain why the languages of Madagascar should bear affinities to those of Sumatra 3,000 miles away, rather than to those of East Africa barely 300 miles away. This becomes all the more remarkable when we consider that there is scarcely any island available between Sumatra and Madagascar" [*Elements of the Science of Language*, Cal, 1951, p. 231]

Now a little more acquaintence on our part with the issues that the Antipodes and the Pacific pose to us in respect of early interhemispherical and trans-Pacific migrations that have a bearing on the occasional emergence of corridors would be of much avail here.

INTERHEMISPHERCAL AND TRANS-PACIFIC ISSUES

162–I. We have earlier taken note of the phenomenon of the presence of Indo-European linguistic influences and elements that are discernible in the early American proto-language (5-I) in the light of glottochronology. It is now a generally-accepted fact that man did not originate in America and that he first entered the New World by way of the Bering Strait. "The erstwhile land-bridge across the Pacific," writes Coon, "which connected Eurasia with North America was a broad, flat, ice-free highway that appeared during periods of glaciation whenever the ocean level was lowered by immobilization of water in the form of ice at the poles. The land-bridge last appeared probably between 70,000 and 8,000 BC, either during this entire period or in parts of it. Although it lay at an altitude of 66°N., the southern shore of the bridge may have had mild winters at this time, being protected from the arctic waters and tempered by the westward flow of the Japanese current. Animals able to live through a moderately cold winter could have crossed the bridge in either direction, and many of them did" [*The Origin of Races*, Lon, 1962, p. 43].

163. I. In North America there were two traditions of lithic tool technology, one in the east that placed a greater emphasis on flakes and bifacially flaked stone implements, and other in the west where cores and chopping tools are important. "In the Old World, too," writes H. M. Wormington, "there were distinct traditions. In southeastern Asia Chopping tools made from cores and pebbles were typical implements, while in other parts of the Old World bifaces and flakes were widely utilized. It seems more than coincidental that two similar traditions should be found in the New World" ["The Peopling of North America," *Human Evolution*, NY, 1959, p. 403]. W. W. Howells (1940) believes that when man first came to America there existed in eastern Asia a slightly specialized population in which Mongoloid and possibly certain Caucasian forms were simply incipient. Joseph Birdsell (1955) has tried to determine which racial elements were present in Asia when the first movements into

America occurred, and, instead of concentrating on American data alone, he has made use also of the data from Australasia. Birdsell agrees with C. Coon, who believes that originally only the eastern branch of the Caucasoid stock, which is called the Amurian, was represented in northeastern Asia. The oldest cultural remains in North America go back to c. 25,000 BP, when, during the later part of the Pleistocene and towards its end the central plain of Alaska and lowlands bordering on Bering Strait and the Arctic Coast remained unglaciated. Somewhat later an ice-free corridor opened along the eastern slope of the Rockies leading from Alaska into the plains of Canada and U. S. A. "On and off during this same period", observes J. J. Honigmann, "ice or land-bridges connected Alaska with Asia. Around 8,000 BC man reached the southernmost tip of South America { 5-I }. Stone tools of very early age resembling Mesolithic microliths (micro-blades) have been recovered from the north Bering Coast of Alaska. The number and character of these early migrations presumably bear some relationship to the linguistic stocks in North and South America." [*The World of Man*, NY, 1959, pp. 785-6]. "Diffusion of culture from Asia to America", writes Ralph Linton, "and even sporadic migrations probably continued until fairly recent times.... There were Inca stories of islands to the west. The Polynesian languages belong to a single linguistic stock (Austric) which extends across Oceania and South-east Asia to Madagascar, but which has no American representation" ['*New Light on Ancient America*', *Readings in Anthropology*, NY, 1955, p. 49], though recently Indo-European linguistic elements have been detected both in America { 5-I. }, and the Pacific [Wallis, W. D., 'Classical and Indo-Iranian Analogues in Southeast Asia & Pacific Islands', *Culture in History*, ed. S. Diamond, NY, 1960, pp. 317-32].

164-I. "The botanical evidence," writes Coon while summarizing the progress of researches into the trans-Pacific connections in antiquity, "that is used to dispute the ancient impregnability of America can be boiled down to four principal plants : the gourd, cotton, the sweet potato, and Indian corn (maize). Maize, the principal food-grain of the Americas is dated back to c. 3,600 BC in the cultivated form at Bate Cave, New Mexico [*HMI*, UNESCO, 1963, p. 258]. It was not originated in America and we have already noticed a possibility of its having reached there from Southeast Asia { 41-I, 49-I }. "Edgar Andeson, after studying some small-eared varieties grown in the Naga Hills of Assam by tribes of head-hunters, and some Chinese historical records, belives that maize was grown in the highlands of Southeastern Asia" [Coon, C, *History of Man*, Lon, 1962, p. 356].

The ancient Egyptians knew maize and the Romans ate its immature fruit. In India and Southeast Asia gourds were used for bottles and dishes, as it was in Central and South America. Junius Bird found gourds in the earliest levels at Huaca Prieta. Botanists believe that it was originally domesticated in Africa or India, probably the latter, and that it was not native to the western hemisphere. It seems to have been cultivated in both the Old and New Worlds before 2,000 BC. It is possible that some unknown sailor drifting in a canoe from Africa brought the gourds to Brazil, but it is unlikely. Although we know little about the prehistory of West Africa, we feel fairly sure that agriculture developed there too late to permit a passage at a time equivalent to the Old Kingdom in Egypt. If the gourd was carried by human hands across the Pacific, this happened before the probable time of settlement of the islands by Polynesians. Cotton, a genus known as *Gossypium*, was cultivated as early as 2,500 BC in both Peru and the Indus Valley. Unlike the gourd, cotton is not all one species. (East) Indian

BC, from Niah Caves [Harrison, T., *50,000 Years of Stone Age Culture in Borneo*, Wash. 1965 pp. 526-8]; and still earlier archaeological and palaeontological finds are well-known from Java that carry us back to early Middle Pleistocene, as we shall review later in some detail. "The first people to reach North America," writes Coon, "had a broad Pleistocene highway to walk over. The level of the earth's oceans controlled their time of passage. The first to reach Australia and New Guinea had no such dry road, for the islands of Wallacea rise steeply from the sea. With or without the presence of the Sunda and Sahul shelves, who ever made the crossing still had to hop from island to island on rafts or small boats, and the greatest distance that had to be traversed was about 50 miles" [*The Origin of Races*, Lon. 1963, p. 406]. The Palaeolithic man was thus able to cross over the remotest prolongation of the Eurasian land-bloc, for it embraced, the present islands of Taiwan (Formosa), the Philippines, Borneo, Sumatra, Java, and Bali; and Lombok, Timor, Sulawesy (Celebes), Papua (New Guinea), some Melanesian islands, and Australia including Tasmania formed a separate unit intervened by the Vallacean break that divide the 'Australian' fauna from the 'Oriental'. Beyond this in the Pacific the distances between island to island were probably beyond the reach of the Pleistocene hunters and gatherers having a pre-Blade lithic technology, for them to cover the distance and reach America. It was during the Post-glacial period when the subsistence economy had been mastered during the Neolithic, that human communities could reach and settle in the Pacific islands.

168-I. The Pacific islands scattered over an area of about 30 million sq. mls. have geographically been grouped under the Melanesia (the islands south of equator and north and northeast of Australia, including New Guinea, the Bismarck Archipelago, the Solomon, New Hebrides, Admiralty, Santa Cruz, New Caledonia, Loyalty, and Fiji), Micronesia (Marianas, Caroline, Palau, Yap, Marshall, Gilbert and many other islands), and Polynesia. The last group is a huge triangular area, 5000 mls. N→S, and 400 mls E→W, extending from Hawaii on the north to New zealand on the southwest and Easter Island (Rapa-Nui) on the southeast and including the Marquesas, Tuamotu, Society, Samoa, Tonga, Cook, etc. The indigenous inhabitants of Fiji are regarded of the Melenesian stock possessing much Polynesian culture [Freeman, O. W., *Geography of the Pacific*, NY, 1951, pp. 6-7]. Easter Island itself is a far cry from its nearest neighbour in the west, the Henderson Island, but the next eastward island San Ambrosio lies 6000 mls away, and from there the distance to the nearest South American coast in Chile and Peru, where the great Inca Civilization regarded as the Roman Empire of the Antipodes and was called Tawantinsuya, flourished, is about 500 mls.

THE AUSTRIC-SPEAKERS

169-I. What is remarkable about the Pacific islanders that though they have been living apart from each other, they possess a remote linguistic unity and the languages of their major part have been resolved into what is called the the Austric family. "The Austric speech and the bases of Austric religion and culture", states S. K. Chatterji, "appear to have been characterised within India. Branches of the original Indian Austric people carried their language to the south and east, to Malaya and Indonesia, and from Indonesia to Micronesia and Melanesia and than further into Polynesia. The original Austric stock, was considerably modified in the islands... some Austric tribes in Indo-China became the Mons, the Khmers or Cambodians, the Chams, and the lesser known tribes like the Stiengs, the Bahnars, the Paloungs, the Was (of Burma) and others. A group sailed into the Nicobar Islands, and became the Nicobarese.

Other groups, i. e., the ancestors of Khasi and others penetrated into Assam. Those Austric tribes which came into India have still preserved their language are the Kol (or Munda) peoples, like the Santals, the Mundas, the Hos, the Korwas, the Bhumijas, the Saoras, the Gadabas, the Korkus, etc.. The Continental Austrics, in contradiction to the Island Austrics or Austronesians, are called Austro-Asiatics. The Austric-speaking tribes of India appear to have belonged to more than one group of the Austro-Asiatic section — to the Kol, to the Khasi, and to the Mon-Khmer groups.. They developed a primitive system of agriculture in which a digging stick (*lag, lang, ling - various froms of an old word *lak) was employed to till the hill-side. Terrace cultivation of rice on hills, and plains cultivation of the same grain in all likelihood were introduced by them. They introduced or developed, as the names from their language would suggest, the cultivation of the coconut (*nārikéla*), the plantain (*kadala*), the betel vine (*tāmbula*), the betel-nut (*guvāka*), probably also turmeric (*haridrā*) and ginger (*śṛngavēra*), some vegetables like the brinjal (*vātingaṇa*), and the pumpkin (*alābu*). They appear not to have been cattle-breeders — they had no use for milk, but they were probably the first people to tame the elephant, and to domesticate the fowl. The habit of counting by twenties in some parts of North India (cf. Hindi *koṛī*, Bengali *kuri*, from the Austric....The Austric tribes spread over the whole of Northern India, right up to the Punjab, and in Central India, they penetrated into the South also....The name of the river Ganges, *Gaṅgā*, would appear to be a Sanskritisation from some ancient Austric word meaning just a 'river' — a word which is found in Indo-China (in the Thai speech) as *khong*, as in *Mé-khōng* {Mekong}, i. e. *Mā-Gaṅgā* = 'Mother River' (cf. Siamese *Mé-nam* = 'Mother Water'); and the word is found in Central and South China as *kiang*, as in *Yang-tsze-kiang* and *Si-kiang* and in numerous other river-names in South China, like *Yu-kiang*, *Wu-ni-kiang*, *Lung-kiang*, *Pe-kiang*, *Lo-kiang*, *Han-kiang*, etc. — the Old Chinese pronunciation of the word *Kiang*, dialectally *Chiang* = 'river', having been **Gang*. (The original meaning of the word *Gaṅgā* is still preserved in the modern Bengali equivalent of it *gāṅg*, *gāṅ*, which means 'any river or water-channel').....The Austric peoples had the custom of setting upright rocks or stone slabs as grave-stones (menhir, memorial stone). Tree-burial was one of their customs....Austric dialects spread along the Himalayan regions, and like some of the plains Aryan speeches like Magahi and Maithili, a number of Tibeto-Burman dialects, some 21 in all, like Dhimal, Limbu, Lahuli, Kanauri, etc., which ousted Kol dialects, adopted some of their characteristics as a substratum. One form of the Austric may even have penetrated into the north beyond Kashmir, where we have Burushaskí....The date when the Austric peoples began to filter into India is not known, but it must have taken place several thousand years B. C., and certainly long anterior to the advent of the Aryans" [*Indo-Aryan & Hindi*, Cal. 1960, pp. 36-42].

170-I. "The Nishāda {or Austric} speeches," let us quote again S. K. Chatterji, as a leading philologist who has devoted much labours recently to the Austric languages of India, which he calls the Nishāda, "were probably in three groups, a Kherwari group including Santāli, Mundāri, Ho, Bhumij, etc. the 'Kol' speeches of the presest day; a Korku group, including Korku of the present day and possibly the lost Bhil speeches of Māwā and Rājasthān; and the Gadaba-Savara group of Orissa." [Chatterji, S. K., 'Nishada and Kirata', *The Struggle for Empire*, Ed., Majumdar, R. C., Bom. 1957, p. 378]. "Thus in the non-cultivated pre-Aryan Nishāda speeches like 'Old Kol' (or Old Kherwari) in which were merged the Santāli, Mundāri, Ho, Kharia, etc., 'Old Bhili' which survives in Korku, and

'Old Savara' from which are descended Gadaba and Saora, there was in all probability an oral literature of legends and tales and songs and poems" [*Ibid*, p. 380].

THE AUSTRIC (INDO-PACIFIC) FAMILY OF LANGUAGES

171-I. The tree of the Austric (Indo-Pacific) linguistic family is as under :—

- Austric Languages
  - Austronesian (Malayo-Polynesian)
    - Indonesian
      - Malay
      - Salon
    - Oceanean
  - Austro-Asiatic
    - Cham (South-eastern mixed group)
    - Proto-Malaccan group (Non-Malay peoples)
      - Semang
      - Semoi
    - Khasi-Nicobar group
      - Khāsi (India)
      - Nicobar (India)
      - Salween
    - Non-Khmēr group
      - Mon (Peguan)
      - Khmēr (Cambodian)
      - Moi dialects
      - Modern Malaccan
    - Muṇḍa (Kōl) (India)
      - Eastern
        - Santalī
        - Muṇḍārī
        - Bhumij
        - Koda
        - Ho
        - Korwa
      - Western
        - Kūrkū
        - Kharia
        - Kanawrī
        - Juang
        - S'abara

[Taraporewala, I. J. S., *Elements of Science of Language*, Cal. Uni., 1951, p. 210].

172-I. Now the next important point that requires to be reviewed in connection with our ensuing discussion on the role of the geomorphological Circum-Pacific and Alpine-Mediterranian Trans — Asiatic Zones [157-I] in the human process in early times is the antiquity of the so-called Austric languages in India.

173–I. " Investigations started by Sylvain Levi and Jean Przyluski in Paris ", writes S. M. Katre, " show that Old Indo-Aryan found in the Rigveda and Atharvaveda contains words borrowed from the Austro-Asiatic sub-stratum. Some of our cultural words, particularly in certain skills and crafts, such as brick-making, rice-culture, etc., or names of things like betel, cotton, cotton-cloth, bamboo, arrows, etc.; or geographical names like Kosala, Tosala, Kalinga, Trilinga, etc.; or the Vegesimal system of counting with Kori (20) as a unit, appear to have their origin in this group " [' Vocabulary & Syntax ', *Affinities of Indian Languages*, ND, 1959, pp. 12–3].

174–I. Since the Rigvedic language (an early stage of the literary Old Indo-Aryan section of the Indo-Iranian branch in the *S'atam* group of the Indo-European linguistic family) belongs generally to the mid-second millenium BC { 96–I }, the antiquity of the Austric loan words that got incorporated into this speech, goes obviously to a proto-Vedic period whose lower time-limit remains yet to be investigated. The evidence, taken into consideration in conjuction with various other facts and factors to be noticed at a later stage, establishes a priority for the presence of the Austric-speaking community in or around the Indo-Sarasvati basin over the war-chariot-using Rigvedic Indo-Europeans. We have noticed earlier { 19–I, 2 } Vavilov's location of the cradle of the cultivated rice, gourd, coconut, cotton, sugar cane, indigo, etc., in the eastern India { 23–I } on botanical ground, on one hand; and that the cultivation of these plants was characteristically associated with the Austric-speaking community, on linguistic basis { 169–I }, on the other. It thus becomes somewhat evident that the people who have been regarded variously as the Old World Eastern Farmers { 84–I }, the Eastern Agricultural Society { 43, 85–I } of intensive manual agricultural stage { Fn 5, 2; without plough, hoe is used, ancient American civilizations were based on this subsistence system }, whom we shall hereafter call the Eastern Basic Farmers { 84–I }; who had a matrilinial social structure and a pantheon of mainly female dieties { 68–I }; who in the course of their gradual westward shift across northern India would have avoided certain areas in interest of their paddy-cultivation that generally requires a rainfall range over about 40" { 41–44 }; who are held to be the ancestors of the present day hill-tribes of middle India { 41, 123–I } and on ethnographic ground to have reached as far west as the southern Arabia, the Nubian Nile and parts of North and East Africa (the Gondids) by the time of the rise of the Old Empire of Misr { 84–I }; who had a ' dispersed settlement ' pattern constructing { 85–I } ' gabled cottage ' { 57–I } or ' long houses ' { 57–I }; who comprised originally a number of Indian fishing and navigating communities { 85–I }; who had domisticated buffalo, pig, elephant and fowls { 85–I } and the occurrence of matriarchy in the early Egyptian and Cretan Civilizations { 67, 84–I } is attributable provisionally to them; who worshipped the nude Mother-goddess and phallic emblem which they might have passed on to the Pre-Ceramic Neolithic of Middle East { 84–I }, during seventh millenium BC; were all mainly the Austric-speakers. The range of the dispersal of the Austric-speakers spreads over a vast distance of some 15,000 miles, from the Easter Island in the east to Madagascar in the west, as against that of the Indo-European speakers which stretches for about half of this distance from Iceland to Assam in the Old World. The term ' Austric ' carries more an ethnometric than a linguistic sense. The criteria of ethnometry as a historical data is more useful for the period covered by prehistory, i. e., the time-span prior to the Subsistence Revolution. The ethnographic groups of mankind became mixed to the extent that data on physical types is not of substantial historiographic value. Under the circumstances the author would like here to supplant the term the ' Austric ' with that of the more appropriate the ' Indo-Pacific '.

176-I. There are authorities who are not in full agreement with the exponents of the theory of the composition of the Austric linguistic family[32] [Greenberg, J. H., 'Historical Linguistics & Unwritten Languages,' *Anthropology Today*, ed., Kroeber, A. L., Chicago, 1953, pp. 281–3]. However, its Austro-Asiatic branch that lies on the Pacific, if not in the Pacific, is understood to rest on relatively firmer grounds. So, at least in the sense that our term the Indo-Pacific is confined mainly to this branch, is adequately justified. But, if we leave out the linguistic evidence, there still remains a lot of other data that again justify the application of this term to both the groups, the Austro-Asiatic and the Malayo-Polynesian or Austrenesian; but in that case the term carries not merely a linguistic, but an ethnolinguistic sense. We are, it may be pointed out, adopting the term in this connotation.

We have thus far been able to identify or trace two components of the mechanism of the human process in India, in the form of the Indo-Pacific and the Indo-European communities who interacted on each other in the habitat of this subcontinent, under variously changing anthropo-ecological conditions during protohistoric times. We have still to see in due course, if there were more such component-communities in India.

Still we have to acquaint ourselves with various facts pertaining to the Indo-Pacific community before we pick up the threads of the main story.

177-I. "Down in Southeast Asia," writes William Howells, "lie Indo-China, Burma, and Siam, and beyond the islands of the Indies, including the Philippines and Formosa. This is all an area of tropical forest and heavy rainfall.... It is the home of another cultural development, distinct from the web of Neolithic cultures of the rest of Asia.... By the beginning of our Christian Era, Indian colonies, or states on the Indian pattern, were growing up all the way from Burma to Borneo, and a thousand years later major empires appeared on Sumatra and Java, building great temples and casting their shadows northward beyond the

32 – Schmidt, P., *Die Mon-Khmer Völker, ein Bindeglied zwischen Völkern Zentralasiens und Austronesiens*, Brunswick, 1906 : Grierson, G. A., *The Linguistic Survey of India*, II, 1–57; III, 273–567; IV, Cal., 1904–9 : Ray, S. H., Comparative Study of the Melanesian Island Languages, Cambr. 1927 : Macdonald, D., *Oceanic Languages, their Grammatical Structure, Vocabulary, and Origin*, Lon., 1907 : Przyluski, Lévi, S., & Bloch J. trans., Bagchi, P. C., *Pre-Aryan & Pre-Dravidian in India*, Cal, 1929 : Chatterji, S. K., *Origin & Development of the Bengali Language*, Cal., 1926 : Goswami, Krishnapada, 'Non-Aryan Elements in the Place-Names of Bengal', *IHQ*, XV, 1939 : Kakti, B., *Assamese, its Formation & Development*, Gauhati, 1941 ; Sur, A. K. 'Pre-Aryan Elements in Indian Culture', *IHQ*, X, 1934 : Kuiper, F. B. J., *Proto-Munda Words in Sanskrit*, Amsterdam, 1948 : Uxbond, F. A., *Munda-Magyar-Maori*, Lon, 1928 : Mishra S. S., Bhāratiya Saṃskriti meṇ Āryetarāṃśa, Hindi (Non-Aryan Elements in the Indian Civilization), Lucknow, 1952 : Maspero, H., 'Langue Mounda', *Langues du Monde*, Par., 1952, pp. 623–44 : Burrow, T., 'Non-Aryan influence on Sanskrit,' Ch. VIII, *The Sanskrit Language*, Lon, 1955 : Gonda, J., *Austrisch en Arisch*, Utrecht, 1932 : Chatterji, S. K., 'India & Polynesia : Austric Bases of Indian Civilization & Thought', *Bhārata-Kaumudī*, Allahabad, 1945 : Shorto, H. L., ed., *Linguistic Comparison in South East Asia & the Pacific*, Lond. Univ., 1963 : Klieneberger, H. R., *Bibliography of Oceanic Linguistics*, 1957.

Philippines as far as Formosa....This culture, the one we are familiar with, was a high one, with large states, writing and impressive architecture. Nevertheless, the chopped-up island and mountain geography has enabled forest and valleys to shelter remnants of older cultures for what must have been thousands of years. We can almost peel off the layers of higher culture, and so look backward in time [Howells, W., *Man in the Beginning*, Lon. 1956, pp.-190-1].

178-I. If we carry this peeling-off far enough, we come down to nomadic and seminomadic hunters of the forest especially the Negritos, whom we find in sole occupation of the Andaman Islands, and also in the interior of the Malay Peninsula and various islands of the Philippines. They use the bow and arrow, and live in rock-shelters or impermanent villages of flimsy huts. There is another distinct strain, seen in such peoples as the Sakai of the Malay Peninsula and the Kubu of Sumatra. These are also nomad hunters, using a blow-gun. They are taller than the Negritos, and seem to be most like the vanishing Veddas of Ceylon. They are possibly another suggestion of a deeply submerged White strain, ancient in eastern Asia. The living people described are only two examples of hunter-gatherers, and archaeology has unearthed various pre-Neolithic or early Neolithic cultures throughout the area, to say nothing of remains of the earlier Paleolithic. If, however, we stop the indigenous process before going down so far, we find a simple Neolithic culture, among the uncivilized peoples of the backwoods, below the historical level but above the hunters. Such people live in many parts, from the mountains of Formosa and the interior of Borneo to the islands strung in a line south of Sumatra and back up to the mountains of Burma, Assam and Indo-China. The people themselves are Mongoloid in nature, though shading off into unmongolized. American-Indian-like types with vague evidences of a White strain as well. The 'culture' of these largely pagan peoples covers a great many different tribes. Their villages are isolated and sufficient to themselves in their affairs. This is the home of head-hunting, a persistent and important custom from one end of the area to the other. Against this, villages in many parts are palisaded for defense, or otherwise protected by having a ditch, being built on a hill. Houses themselves are well constructed, of heavy timbers, and are usually on piles, raised off the ground, and reached by something like a notched log for a ladder. In Borneo, families have their own apartments in a single 'long house' {57, 54-I} for the entire village running along a river-bank for several hundred yards, with a porch or gallery for its whole length. This kind of house can hold five or six hundred people. But all this solidity of the house does not mean that its owners never move. For the method of clearing and planting is that of slash-and-burn {Fn. 5}, cutting and burning the trees and bush, and planting and cultivating with a digging stick. In Borneo the nearby land along the river is all used up in the course of about twenty years, whereat the people may literally chop the house down, cutting the piles off at the ground, dismantling the timbers and floating the whole apparatus downstream to a new spot. As to the crops, everybody knows the place of rice in East Asia. But that kind of wet rice, grown in paddies and in terraces on hill-sides, plowed with the buffalo, is the "civilised" staple. Some of the indigenous people have it (as in the Philippines), but it is obviously a later introduction to them just as are American corn and various other vegetables. An older crop is dry rice, grown more like other grains and usable on hill-sides without terraces; this is important, for example, in Assam, Upper Burma and in Borneo. And millet, ancient in China, gives signs of being also ancient here, more so than either kind of rice. As for domestic animals, the only ones they have had long (always excepting dogs)

are the chicken. They eat chickens and eggs very little just as the Chinese do not drink milk; instead, chickens are kept largely for sacrificing and for fortune-telling. So there is a considerable amount of hunting and fishing with spears and blow-guns. The people are good workers in iron and brass, making swords and ornaments, but the use of metal seems to belong to an upper level of the culture, meaning that they originally relied on stone tools. Weaving and dyeing, mostly of their own cotton, is also widespread and excellent. and dress nowadays is often a long skrit or a full toga for women, and a breechclout and an open-fronted waistcoat for men. Dress was formerly slighter, fashioned mainly of bark cloth. More generally beloved is tattooing of the skin, and above all accessory adornments to one's smile, is filing of the front teeth to points, or the nailing onto the gums of a decorative metal plate. Another is the darkening of the teeth, often by chewing betel nut. One final well-nigh universal effort for loveliness is the stretching of ear lobes by means of big buttons or plugs set into pierced holes. The religious ideas of the region run in two other directions; to hordes of minor spirits and godlings, and to a very widespread ancestor worship. Here, then, is a broad kind of culture in the southeast of the Old World which is still a good deal of a mystery. It has considerable unity. It has obviously independent in type from the cultures of Western Asia. Does this mean that it was based on an independent discovery of the uses of domesticated plants and animals? It certainly looks so. The plants which are apparently the oldest in use (like taros and yams as well as the plantain-banana group) are the ones most unlike the original plants in the west, and show some signs of having been long domesticated. Further, Professor Carl Sauer {49-1}, believes that here was the first, the original, discovery of plant domestication by man. According to his belief, Mesolithic fishing people living along the rivers and shores of Southeast Asia were sufficiently sedentary to allow them to experiment with domestication, under the impetus of increasing the plants which they used for fish-poison, for net-fibers, or for bark-cloth, and not only for food. This kind of planting involved the simple setting out of roots and shoots; that is, a rather obviously method of duplicating existing plants, rather than grasping the whole cycle of plants which can be propagated only from seed. The sowing of grain, Sauer thinks, was actually achieved later, when knowledge of planting had travelled to Western Asia, to open valleys and hillsides where seed-planting was easier, and planting from cuttings more difficult.

179-I. Beyond Indonesia, and north and east of Australia, lies Melanesia. It is generally unhealthy. The coastal Melanesians are good navigators. They are all Neolithic gardeners. Their general culture stems from that of Southeast Asia, and represents what must be an early form of it. Their leading crops are the roots and fruits, without rice, yams and taro, and also the banana-plantain family and the breadfruit tree, all of these things having been imported, along with pigs. Various other things are grown, such as coconuts, sweet potatoes, pumpkins and sago. Villages are not forced to move by soil exhaustion. Everybody pierces his ear lobe and puts something in it, and many people pierce their noses as well, for a bone splint or a big shell ring. Ties with Southeast Asia are plentiful in social life. The idea of a club-house is a common one throughout Indonesia and Melanesia. Women, children and certain others are not molested. Melanesian religion can be summed up in "ghosts" and "mana." As in neighbouring Indonesia, again, it is ghosts and small-scale malevolent spirits which dominate the spectral scene, not gods. If we now leave Melanesia and cross the Date-Line, we come to yet another ocean culture rooted in the Neolithic of Southeast Asia. We are in Polynesia. The Polynesians brought vital plants of Southeast Asia in there canoes. Life is not hard. Houses are

handsomely made of timber, but not raised off the ground. Dress, in the old days, was of tapa, finely made bark-cloth. Social ceremonial reached a peak in Polynesia. In Samoa a village or district was ruled over by a sort of House of Lords, composed of men with hereditary titles, who formed a council. In the east, however, the nobles, with the king at the top, lorded it over the commoners, with slaves at the bottom. Such a hiararchy made possible the expansion of authority, and this happened in Tonga, and in Fiji. Polynesians seem to have taken material which was lying around loose in the cultures of their relatives in Indonesia and Melanesia-social class, ancestor-worship, mana—and constructed a single coherent scheme with high gods, elaborate worship and philosophical ideas, and a strongly defined social structure. Nobody knows where they came from, except that it was Southeastern Asia; and guesses have placed the homeland all the way from India to China. They have myths about the old home, the use of rice, and probably of pottery. This culture must have been moving out into the Pacific fairly early. Fragments of pottery of a good grade have been found on Saipan in the Marianas, in a level dated by radiocarbon to about 1500 BC., and the Marianas also had rice in historic times. The modern Micronesians are something like the Polynesians in culture and type, and also little like the Indonesians.

THE BAMBOO AGE OF PENINSULAR INDIAN AND SOUTHEAST ASIAN HILL-TRIBES

180-I. The duality of traits that we have noticed among the two sets of the basic farmers of the Old World, receives, indeed, some confirmation from archaeology, though, it should be borne in mind in this respect, that archaeology can hardly be expected to play that role as a protohistoriographic data in the case of the Eastern Basic Farming society, which it plays in respect of its western counterpart, because, the material equipment needed by the former, is mainly provided by such perishable materials as bamboo, bone, palm, sago, and other plants. To contimental Southeast Asia are endemic bamboo, some incense and gum-producing trees, comphor, ironwood, teak etc. The bamboo is a widespread plant of this region as well as East Asia. It is prominent round the China Sea and India, but stopping short of the Thal Desert. The use of this woody, tough and flexible member of the grass family in structures and domestic articles has set a distintive form in Oriental designs [Dobby, E. H. G., *Monsoon Asia*, Lon, 1961, p. 44]. The bamboo, together with palm, has also played a significant role in the tribal and rural economy of India. The bamboos are found throughout India in moist deciduous forests, etc., except in the Himalayan Zone, west of the Sutlej. *Dendrocalamus strictus*, with stems 30′-50′ high and 1″-3″ in diameter, is an 'all-purpose' bamboo used in huts and scaffolding, basketry and mats, sticks, furniture, household and agricultural implements; the leaves are used for fodder and the stems and rhizomes are burnt. In wetter Bangal and Assam it is replaced *D. Hamiltonii*, a larger plant used among other things for timber-rafting. Also in Assam occurs *Melocanna bambusoides*, forming immense thickets, 40′-60′ high, on abandoned shifting cultivation : this secondary growth is practically impenetrable and vast areas of good forest on the Chittagang-Arakan Hills have been replaced by *Melocanna*, which is, however, exploited as a raw material for paper-making. In southern India the thorny *Bambusa arundinacea* is common, often cultivated in magnificent clumps 80′-100′ high. Probably no part of India, except the Assam-Burma Hills, has such a well-developed bamboo culture as exists in the States and other parts of Southeast Asia. [Spate, O. H. K., *India &Pakistan*, Lon, 1954, p. 75]. The hill-peopes of Southeast Asia, eastern and Peninsular India depend heavily on bamboo

for their material equipment to the extent that we may safely regard them as living in a Bamboo Age or technological stage, in contradistinction of stone or metal-based technologies of the Western farming community.

THE EARLY NEOLITHIC EXPANSION OF INDO-PACIFIC COMMUNITY BETWEEN MELANESIA AND CENTRAL EUROPE

181-I. However, the Bamboo Age people of the Peninsular India, Southeastern and East Asia, too, need some rock for hard cutting tools, and in this respect, it is quite obvious that the development of their lithic technology proceeds on rather different lines from those of the Western Basic Farmers, on account of diverse environmental conditions. During the Palaeolithic technoeconomic stage the method of stone tool flaking differed among these two sets of peoples, for, as we know, the Eastern Community had what is called the Chopping tools { 4-I } tradition [Hawkes, Jacquetta, *HM*, 1963, p. 65, 68-71], associated largely with *Pithecanthropi* and related Soan breeds of the Himalayan Zone. However, despite this technological variation, handaxe is an implement shared by both the communities during the Palaeolithic period, and was continued in one form or the other well into the subsequent lithic stages by the Eastern Community, whereas in the Western Community its use yielded to the Blade industries of the Upper Palaeolithic, often ascribed for their outhorship to *Homo sapiens*, { 4-I }. In the course of the Neolithic when food-producing techniques were rising the Handaxe began to be grounded for obtaining a sharper and even edge for clearance of forests for cultivation. "The earliest neolithic tools with ground blades", states S. A. Semenov, "have been found in Nostvet (Scandinavia) in northern Europe and in Bak-Son (Indo-China) in southern Asia" [Semenov, S. A., *Prehistoric Technology*, tr., Thompson, M. W., Lon. 1964, p. 69].

182-I. "In Eastern India and all over South East Asia", writes V. D. Krishnaswamy, "two different tool-traditions persisted side by side, unaffected by any microlithic influence in contrast to Provinces A (Central and Western India) and B (South India). The first tradition of predominantly chipped and flaked stone tools — reminiscent of the palaeolithic — was the earlier one, uniformly distributed all over this heavy-monsoon region. Further, edge-grinding was a consistent feature of the flaked and chipped tools in south-east Asia, wherein we can see an intermingling of the two traditions in the Hoabinhian and Bacsonian in Indo-China and Kelantan in Malaya. This was the main cultural tradition of the early eastern neolithic, prior to the appearance of an independent second tradition belonging to the later neolithic, using predominantly ground, sawn and fully-smoothed tools. The second tradition gains in importance as we proceed eastward from Chhota Nagpur to Indo-China through Assam and Burma. The focus of this culture can be located in Malaya and Indo-China. Further, this tradition of grinding sawing tools is associated with pottery in south-east Asia, suggesting an intrusion from outside" [Krishnaswamy, V. D., 'The Neolithic Pattern of India', *PISC*, 1959, Pres. Addr., Anthropology & Archaeology, Delhi, p.].

183-I. In Europe in the Alpine region, embracing Switzerland, the French Jura, Würtemberg, and the northern frontiers of Italy ground or polished axes called generally celts or shoe-last celts have been found together with the bones of domestic Turbary pigs (*Sus palustris*), derived evidently from the Southeastern pig *Sus indicus* [Forde, C. D., *Habitat Economy & Society*, Lon, 1956, p. 445], in the vestiges of the villages of the Neolithic

Lake-Dwellers (c. 2800 BC). The lake-or pile-dwelling is characteristic of Southeast Asia and it is not clear why these people lived over water in Europe. Remains of similar lake-dwellings varying in age from the Neolithic to the Iron Age have also been found in Scotland, Russia and North America. Such villages still exist in Sumatra, Borneo and New Guinea [Renard, G., *Life & Work in Prehistoric Times*, NY. 1929, p. 86]. Venezuela owes its name (Little Venice) to the fact that when Alonso de Ojeda discovered it in 1499, he found the indigenous people living in pile-dwellings on Lake Maracaibo [Rickard, T. A. *Man & Metals*, I, NY, 1932, p. 67]. It is suggested that these Swiss Lake-Dwellers were originally the Southeast Asian Eastern Basic Farmers who had reached as far west as the Alpine region in Europe during the early third millenium BC when the Early Dynastic Shumerian Civilization (c. 2700-52400 BC) representing a mature phase of the Urban Revolution was rising in the southern Iraq.

184-I. " The importance which C. O. Sauer attaches to coastal fishermen, mussel-collectors, etc. for the origin and spread of planting, has been gaining increasing support with the progress of archaeology and ethnology in the Old World. Shell mounds (Kitchen middens), with their world-wide distribution, seem to have been in many places destroyed either by the surf during fluctuations of the sea-level during the Neothermal or by the tectonic sinking of coastal areas. The result of this, acording to G. Smolla and H. von Wissmann, is that those areas of shell mounds remaining now must represent only a fraction of their former extent and distribution. " This old stratum of fishermen and mussel-collectors ", observe these scholars, " was important not only for the origin of planting but also, to a large extent, for the swift spread of several culture traits, such as, household animals, i. g., the dog, the pig, but above all, of ground stone axes and, later on, pottery " [Wissman, H., von, ' On the Role of Nature and Man in changing the Face of the Dry Belt of Asia ', *MRFE*. 1956. p. 283]. " The polished stone axe, " observes E. E. Evans, " has long been recognized as the index of Neolithic culture; we now see it as the hallmark of forest farmers, much as the steel axe was the symbol of the North American pioneers. " [' The Ecology of Peasant Life in Western Europe. ' *MRFE*. p. 225]. We know that, apart from the dog, cattle and swine were the earliest domesticated animals in Europe; and C. O. Sauer, developing Menghin's views, has postulated a pre-Indo-European pig cult in Europe [*AO&D*. 1952, p. 37].

185-I. In the Middle East, the polished axe attests a high antiquity, and the grinding of stone for vases, etc., dates back to the Mesolithic Natufian culture of Palestine (c. 7800 BC). In northern Iraq this form of axe appears in the Hassuna (4500 BC), Ubaid (c. 3800 BC), and the Gawra (c. 3000 BC) horizons; and in Misr (Egypt) we first encouter it in the Early Predynastic exotic Neolithic cultures of El-Omari (c. 4500 BC), Marimda-Beni-Salama (c. 4350 BC), el-Faiyum (c. 4200 BC), and Deir Tasa (c. 3500 BC), as also in the Sahara. Here, too, it appears to have been connected with a population which had more emphasis on fishing and the pig-keeping. [Childe, V. G. *New Light on the Most Ancient East*, NY. 1952, pp. 38, 40, 47, 107, 116,209 ; Allman, H., *The Prehistory of Africa*, Lon, 1957, pp. 110-5]. It appears in Iran in Sialk I and II (= Hassuma – Samarra – Halaf times of the Iraqi protohistory, c. 5000-4000 BC), but disappears in Sialk III, during the 4th millenium BC. However, the industry is known to have continued into Hissar III (= Early Dynastic Shumerian, c. 2700-2400 BC).

186-I. In India, " in spite of odd finds in Sind and Baluchistan ", observes F. R. Allchin, " there is to this time no very good evidence of such an industry in those areas.

Thus although at Hissar the industry was still in evidence at a date which could well coincide with the earlier phases of the Deccan Neolithic { c. 2500-2000 BC }, there is a wide interval of space separating the two, and the origin of the Deccan industry { 'Ground and pecked stone industry' } must remain rather mysterious". [*Piklihal Excavations*, Hyderabad, 1960, p. 95].

187-I. "There was probably an extensive diffusion", states Jacquetta Hawkes, "of the new economy during the second half of the third millenium BC. The main cereal crop first cultivated in China was millet, already encountered as a subsidiary to wheat in the west. The history of rice is still obscure, but it is thought generally to have been domesticated in India and to have been carried thence to China by way of the Yangtze, where it would have arrived not earlier than 2,000 BC. Wherever its cultivation was adopted, this grain with its immensely heavy yield made possible a far denser peasant population than any other cereal could support. There are sites which can be described as Neolithic scattered in many regions of China and Manchuria. The most numerous and best-known are in the Yellow Earth lands of Kansu, Shensi and Honan. This central plain was, indeed, the cradle of Chinese civilization. Here the Ts'i-kia-p'ing Culture of Kansu, whose creators made plain, thin strap-handled jars and beakers, may have been in being by the middle of the third millenium BC, but surer ground is reached with the well-known Yang-shao culture that spread in and around the middle course of the Yellow River. These peasants lived in pit-dwellings in villages protected by mud walls, raising millet by hoe cultivation and keeping pigs....The spread of the primary Neolithic farming economy in the Old World has now been followed to its farthest extent westward, northward and eastward from its sources....In the succeeding Bronze and Iron Ages farming was of course to be spread very much more widely round these primary regions, but many great stretches of country remained in the possession of hunting and food-gathering peoples....about 2,000 BC, the enormous tracts of central and northern Eurasia were still inhabited only by scattered tribes of hunter-fishers. They had generally acquired pottery and the use of polished stone axes from Neolithic sources, but maintained their old way of life as wandering hunters, or as more settled fisher-folk." [*HM*, I, pp. 255-6].

188-I. In the three great cradles of the Urban Revolution, viz., Misr, Iraq and the Indus valley in Pakistan, the polished axe is very rare, or practically absent in urban cultures. In Palestine they have been found in a small number in association of copper or bronze [McCown, C. C., *The Ladder of Progress in Palestine*, NY, 1943, p. 52]. At Ghar-i-Kamarband or Belt Cave, close to the southeast shores of the Caspian Sea in northern Iran, polished stone axes were found together with pottery and microblades in the Neolithic levels I-IX [Coon C. S., Cave Explorations in Iran, 1949, Philadelphia, 1951, pp. 75-6]. From southern Baluchistan, and Makran not a single polished celt is known so far. At Nal in central Baluchistan two of them were found in a context not useful archaeologically. In northern Baluchistan, at Rana Ghundai, one axe was found in the 'Level-F.' At Organi, not far from Karachi, an axe of this type was discovered. Similar finds are known from Shadipur near Attock, and the Sirkap tell at Taxila [Gordon, D. H., *The Prehistoric Background of Indian Culture*, Bom, 1958, pp. 30-1].

189-I. The remains of a settlement of Neolithic pit-dwellers dated for its Phase I to 1850 ± 130 BC [Kusumgar, S., Lal, D., & Sarna, R. P., 'Tata Institute Radiocarbon Date List I,' *Radiocarbon*, V, 1963 p. 279] or generally c. 1915 BC, that contains polished axes together

with bone tools and a hand-made pottery, have been excavated at Burzahom in Kashmir [Carter, C. E. L., *Stone Age in Kashmir*, Mem. Arch. Surv. Kashmir, No. 2, 1924 ; De Terra, H., ' Excavations at Bursahom ', *Miscellanea of the American Philosophical Society*, 1936; with Paterson, T. T., *Studies on the Ice Age in India & Associated Human Culture* (SIAInd), Washington, 1939, pp. 233-4 : *IAR*, 8960-61, p. II; 1961-62, pp. 17-21 : Gordon, D. H., ' The Stone Industries of the Holocene in India & Pakistan ', *AI*, 6, ND. 1960].

190-I. The discoveries of polished stone axes (the term includes adzes here) or celts in India date back to 1870 [Le Mesuriar, H. P., ' A Note on Twelve Stone Hatchets or Celts from the neighbournood of Jubbalpur *PAS Beng*, XXX, 1861]. They have been found distributed almost exclusively in the central, southern, and eastern India; and a few have been found at the Harappan sites and at Nal and Rana Ghundai in Baluchistan [Worman, E. C., ' The Neolithic Problem in the Prehistory of India ', *J. Washington Academy of Sciences*, XXXIX, 1949]. A typological study of them suggests the two basic techniques involving both chipping and smoothing, employed in their fabrication, according to E. C. Worman. The celts of the first technique have an ovoid, lens-shaped, trapezoidal or triangular transverse section, with an intermediate pecking between the above two steps of chipping and smoothing; whereas, those of the technique second have a rectangular transverse section with a flat face and more than half of their surface occupied by smoothing. Worman states further that the celts found westwards are more often like the early Indian type made by the first technique, while those found eastwards resemble so frequently the later Indian type manufactured by the second technique. The evidence has led him to postulating an eastern origin for the neolithic techniques of stone-working in India [Worman, E. C., *op. cit.*].

191-I. " Despite local variations ", states Krishnaswamy, the latest authority on the Indian Neolithic, " the culture of central and western India, nurtured on the black cotton soil, as far down as Brahmagiri, is broadly homogenous in its contents. At the southern Deccan sites Brahmagiri, Sanganakallu, Kallur and Maski it is dominated by a local neolithic industry **characterized by the polished stone axe**, while in the northern Deccan and central Indian sites—Sojanipur, Nagda, Maheshwar, Navdatoli, Bahal, Prakash { ā }, Nasik, Jorwe, Nevasa, etc.—it is distinguished by a profusion of painted pottery: however, a microlithic industry of paralled-side blades and polished axes, as at Nevasa, and burial-urns, as at Bahal and Jorwe, link both these regions, and a two way traffic is thus discernible.....A distribution – map depicting the pointed - butt polished axe, characteristic of a Neolithic Age in India, shows the grouping in two clusters, viz., in south India (particularly concentrated in the Karnatak region) and in east India (Bihar-Orissa-Bengal region and Assam). They are absent in both the coastal regions. From a superficial resemblace of these pointed-butt axes of two clusters, a north-east to south-west movement has been suggested for the neolithic axe culture. This is further supported by Haimendorf's Munda hypothesis that a late neolithic civilization with eastern affinities, associated with the same form of Austro-Asiatic tongue, permeated the older population of the Deccan. A further correlation is also shown in the affinity of the living megalithic culture of Assam with the Gadabas and Bondos of Orissa and the Marias of Bastar. The older stratum of the neolithic age of India may, therefore, be represented by the pointed-butt stone axe. Since this type is not uniformly distributed in India but is profuse in the Karnataka and east India, we are led to think in terms of two different neolithic provinces — a southern stone-axe culture concentrated in the Karnataka

and an eastern one embracing Orissa, Bihar, Bengal and Assam. " [Krishnaswamy, V. D., op. cit. 1959, pp. 12–4]. The former is typified by the ' pointed-butt polished axe ' and the latter by the ' rounded-butt polished axe '. The controversy among archaeologists is whether these two varieties of a single type of polished stone axes are genetically related or not. F. R. Allchin associates the pointed-butt axe with the Neolithic stone-working techniques of the Middle East and Iran [' The Neolithic Stone Industry of North Karnataka Region ', BSO & AS, XIX, 1957, pp. 321–35], E. C. Worman [op. cit. pp. 181–201] and many others trace its origin to the Southeast Asian Neolithic. Krishnaswamy takes a different stand stating, " The origin of the { pointed-butt } polished axe culture of the Karnataka should not be looked for in the Indus valley or in west Asia or Iran as conjectured by Allchin. The all-eastern origin suggested by Worman on typological grounds does not also seem to be tenable for the reason that the eastern complex is quite different from that of the southern, which is characterized only by the pointed-butt axe and its variations. The culture should have come on the scene autochthonously " [Krishnawamy, V. D. op. cit. 1959, p. 12–4].

192-1. The position leaves a dilemma in the Indian protohistory. The province of the pointed-butt celt stretching between the Alpine region and the trans-Indus terrain in India across the Middle East turns south and occupies the Peninsular India confining itself to the west of a rough line drawn between the middle Narmada and the Godavari Delta. To the east of this line lies there in the eastern India and the Southeast Asia, the province of the rounded-butt celt, which typifies by its presence together with what are called in the Southeast Asian archaeology, (1) the Facetted tool, (2) the Shouldered tool, and (3) the Chisel, the Hoabinhian-Bacsonian culturt complex. " The traces of a mesolithic culture, " writes D. G. E. Hall, " are widespread. It has been named Bacsono-Hoabinhian. The distinguish-ing feature of its stone implements is that they are worked on one side only. With them have been found bone utensils and pottery. The human remains have been interpreted to indicate a race of Australoid-Veddoid type. Traces of a Melanesoid Strain have been found in Indo-China. Artifacts of these people have been found in northern Annam, Luang Prabang, Siam, Malaya, and on the east coast of Sumatra. Anthropologists have classified these people as Veddoid after the Vedda tribe of Ceylon, and assign to this group the Senoi and Sakai hill-tribes of Malaya, and other peoples of south Celebes and on the Engano and Mentawei Islands off the west coast of Sumatra. The men were hunters, fishermen and collecters; the women in some cases used a primitive mattock for cultivating the soil. Canoes made out of hollowed -out tree trunks were in use. Heine-Geldern has ventured the theory that the neolithic oval (rounded-butt)-axe culture found in northern Burma, among the Nagas of Assam, in Cambodia and in the eastern islands of the Archipelago, is connected with the use of a plank -built canoe, and that both represent a development of mesolithic culture. Two other forms of celt come from the neolithic period : the shouldered axe from the Gangetic Basin to Japan; and most widespread of all, the rectangular axe, found in the river valleys of the Hoang-Ho, Yangtse, Mekong, Salween, Irrawaddy and Brahmaputra, as well as throughout Indonesia. As it is found in its purest form on the Malay Peninsula and in middle and south Sumatra, this has been taken to have been the route by which it reached Indonesia. Discussion has centred round the possible relationship between the shouldered axe and the rectangular axe, and the connection of both with the spread of the Austro-Asiatic languages. Sarasin called them the ' Proto-Malays, to distinguish them from the later immigrants, who introduced metals. These latter are called ' Deutero-Malays.' Hendrik Kern, the pioneer of research into the origin of the

Indonesian languages, thought that the linguistic evidence pointed to the region of Champa, Cochin-China and Cambodia as the birthplace of their culture" [Hall, D. G. E., *A History of South-East Asia*, Lon. 1958, pp. 6-7].

193-I. "These are stone axes", turning to another authority we find Harold Peake and H. John Fleure stating, "with surface and edge shaped by grinding, and with an oval cross section {rounded-but axe}. They are well known from India, China and Japan. Some have been found in Further India....But a more important spread took them....to the Philippines and thence to eastern Indonesia and Melanesia....Beyond Melanesia it has been found in Tonga, New Zealand, Tubuai (Astral Islands), and Pitcairn [*Times & Places*, Oxford, 1956, pp. 292].

194-I. Even in America during the later Paleoindian (Palaeo-Indian) Period of its culture-history which G. R. Willey and P. Phillips include under the Archaic Stage of their Historical-Developmental Interpretative Approach {116-I}, the stone celts appear in an archaeological context carbon-dated to the late fourth millenium BC [Crane, H. R., 'University of Michigan Radiocarbon Dates, I,' *Science*, CXXIV, 1956: Green River phase of Southeasten Archaic]. "Material surviving from a somewhat later period of Paleoindian culture in North America," writes J. J. Honigmann, "is considerably more varied. It is marked by the addition of ground-stone implements in addition to those of chipped stone, bone, antler and shell. Heavy wood-working tools include axes and adzes. Polished stone celts really may be ungrooved axheads or all-purpose implements....The {se} American hunters possessed only modest capital equipment....Use of natural copper for artifacts never led to true metallurgy....The harpoon also occurs....Dogs were kept....Some communities settled near shell-fishing grounds. Their refuse heaps recall the kitchen middens of Scandinavia. Basketry appears....but pottery remained lacking....A transition from Paleoindian to Neoindian (agriculture-based) culture occurs in certain parts of North America with the introduction of pottery. Whether pottery originated in the New World or in Asia and by what routes it diffused are questions impossible to answer categorically. Another stream of diffusion from Asia has also been argued and is not beyond possibility. In the Southwest, where agriculture is nearly 6000 years old, pottery has not been found for a date earlier than c. 500 AD. In eastern areas, ... pottery had appeared by 2500 BC, ahead of farming....The major new elements in the Transitional period include greater use of polished stone implements, hunting with bow and arrow; the semilunar knife {= *kukri* of the Gurkhas}, weaving without the loom, and increased ceremonialism accompanying disposal of the dead." [*The World of Man*, NY, 1959, pp. 791-3].

195-I. Archaeology too thus brings together the two Worlds face to face with the polished stone axe as forming a link between the early human processes in the two hemispheres. We have noted earlier {5-I} the occurence of the Indo-European linguistic relics in the American-Indian languages, dating back to an American protolanguage of c. 15,000 BP in this connection.

196-I. We have already noted that the peopling of the New World began with the arrival of *Homo sapiens* from Asia {5-I}. They did not come in a single movement but in a number of waves of migration that lasted over many centuries, and what is strange, that there was a conspicuous element of the Indo-European or the Aryan-speakers among these Asiatic immigrants into America. As to the question of what kind of culture the first

occupants of America brought with them, Prof. A. L. Kroeber, has attempted to reconstruct the elements of original New World Culture based on the elements universally found among the known tribes (Age-Area concept). His list includes stone implements made by pressure or rubbing, bone or horn objects fashioned by polishing, knowledge of hafting, control of fire, making of baskets and nets, use of the spear-thrower or bow, and possession of tamed dogs [*Anthropology*, NY, 1948, p. 778]. Such a list of traits fits the Old World pattern of cultural evolution at a point that resembles the Mesolithic [Titiev, Mischa, *Cultural Anthropology*, NY, 1959, p. 174]. " When all the evidence about the early Americas is put together " as remarks Titiev, " it appears that the line of cultural development in the New World ran parallel to the Old in broad outline, but differed in one essential detail after another. In both vast areas was a similar origin in a hunting and food-collecting stage, featured by the manufacture and use of Palaeolithic or Mesolithic tools. This was followed by the entrance of some groups into Neolithic levels and culminated in cultures that had acquired metallurgy. ....Whether are not the first Americans remained in touch with their homelands in the Old World is a moot question. Archaeologists in this (America) country are reluctant to say that all contact was immediately broken, yet, as they study the evidence, it looks very much as if the great bulk of later American culture went through an independent evolution in isolation. For example, a good number of groups moved into a Neolithic stage, but instead of relying on Old World plants and beasts, we find them domesticating maize, beans, squash, tobacco, potatoes, and such New World creatures as the alpaca, llama, and turkey. Much the same may be said of pottery. "

197-I. Some of the first American hunters were equipped with net and line and gathered shell-fish as their chief means of subsistence. Prehistoric kitchen middens containing bone implements left by them some 2000 yrs ago are found along the coasts of the Atlantic and the Pacific and a few inland rivers of North America. Another primitive livelihood is disclosed along the shores of the dried-up lakes in California and Texas. Mortars and grinding stones found indicate that the early desert-people here ground nuts and seeds into flour, a fact that marks the dawn of food-producing by cultivation. There is no hunting-fishing-gathering group in the Americas which does not take advantage of vegetable products. Some tribes have found their hunting economy so satisfactory that they never abandoned it. Other peoples, like the Eskimos, were so situated geographically that they had to hunt or starve. The Plains Indians acquired the domesticated horse from the Spanish Colonies, turned from a successful farming life to a highly dramatic existence, living off the wandering buffalo herds and exalting masculine virtues in war and the chase. Fishing groups, like the tribes of the North-West Coast, were able to live in sedentary villages and create an elaborate social and material culture on the rich abundance yielded by forest, stream and ocean. In California one of the densest populations in the Americas maintained itself by gathering wild nuts and fruits, supplementing this diet with shell-fish and game { 12-I }.

198-I. Turning to the Subsistence Revolution in America, we find that it was based mainly on the maize { 19-I (7) & (8) } cultivated by intensive manual agriculture { Fn. 5 (2) }, just as rice is produced in the Southeast Asia, i. e., with hoe and without the aid of animal power, called *milpa* (' burn-and-slash ' or *Jhuming*), in contrast to the farming of wheat-barley-rye in the trans-Gangetic Old World (the Indus Valley, Inner Asia, Middle East and Europe) in the production of which the ' plow agriculture ' with the assistance of animal power is employed { Fn. 5 (3) }. This shows very striking common features between the cul-

tivation of rice and maize to the extent of suggesting an identical origin for both. So, either the Subsistence Revolution was introduced into the Southeast Asia from America or *vice versa*. We have already noticed that maize is cultivated by a number of hill-tribes in the Southeast Asia and India and by few peoples in Africa { 41-I }. In India several hill-peoples traditionally cultivating maize or corn, which they call *makai* (Hindi *makkā*), for instance the Bhils in parts of M.P., Mahārāshṭra, Gujarat, and Rajasthān States { 41-I }, who find their earliest reference as the ' Bhillas ' in the Sanskrit literature of the 7th cent AD in such geographical names as Bhilla-māl [*Brāhmasphuṭasiddhānta*, dated Śaka Era 550 = 628 AD], are not mentioned as such in the earlier literature, nor do we find a Sanskrit word for *makai* (maize). We have noticed that Vavilov locates the primary center of maize in Mesoamerica and South America [19-I, 7, 8].

THE HISTORICAL-DEVELOPMENT SEQUENCE OF THE PRE-COLUMBIAN HUMAN PROCESS IN AMERICA

199-I. Now let us acquaint ourselves with the Historical-Developmental Sequence of the Pre-Columbian Human Process in America [Willey, R. G. & Phillips, P., *Method & Theory in American Archaeology*, Chicago, 1958, pp. 61-193] for chronological convenience in connection with what we are going to discuss in regard to the rise of food-producing economy based on domestication of roots and plants includiug maize, and development of civilization in the Maxican plateau and Peruvian altiplano.

Period	Characteristics
1. Early Lithic Stage (Palaeindian = Palaeolithic of the Old World)	Use of rough and chipped stone tools; no polishing or grinding of stone; work in bone and horn unimportant; no permanent dwellings. The sites of this stage have been found in association with extinct elephants and bison in the western plains of the United States.
2. Archaic Stage (= Mesolithic of O. W.)	Grinding and polishing enter as new techniques of stone-working together with more variegated cultural assemblages. Also new are heavy wood-working tools, like the axe and adze, as well as milling stones, mortars, and pestles. Other significant archaic elements include slate points and knives, atlatl weights, bola stones, and stone tubes.
3. Preformative Stage (Transitional)	Agriculture is introduced but it is merely another, and not necessarily the most important, food resource. Hunting and collecting are still followed. Basket-maker culture in the Southwest belongs here.
4. Formative Stage (= Neolithic, O. W.)	Maize and/or manioc agriculture are associated with the successful socioeconomic integration of such agriculture into well-established sedentary village life; pottery, weaving, stone-carving, and ceremonial buildings are diagnostic of the American formative. Such cultures extend from the Southwestern U. S. through Middle America to the Andes Mountains starting in the second millennium.
5. Classic Stage (= Copper-Bronze Age, O. W.)	The criteria are subjective, including aesthetic excellence, religious climax, and general florescence. Diagnostic are fine specialized craft-products for burial furniture, ceremonial uses, or as luxury

items. Intellectual interests and the arts flourish. Only Central America and Peru reveal cultural phases belonging to this stage. In the Guatemalan (Maya) and Mexican (Aztec) regions this stage opens about 300 B. C. and in Peru around the start of the present era.

6. Postclassic Stage (Iron Age, O. W.) — The dominant tendencies are urbanism, secularism (i. e., non-religious leadership), and militarism, the trends of which can be seen earlier; and widespread movements of people and idea systems. The Maya and Aztec postclassic phases started between 800 and 900 A.D. In the Andeans the period opens c. 1000 and ends in 1532 A.D.

200-I. " It seems to have taken a very long time " we find R. S. MacNoeish, one of the latest authorities on the genesis of the Food Production Economy in the Americas, observing thus [' The Origins of American Agriculture ', *Ant.* XXX, 1965, p. 93], " between the first domestication of plants and the establishment of a subsistence based upon agriculture. For example, in both Tamaulipas and Tehuacan, it appears that there must have been a long period of experimentation with wild plants before the first seeds were planted in gardens at about 5000-6000 B. C. Then, too, there was another period (from roughly 6000 or 5000 B.C. to 3000 or 2000 B.C.) during which these areas received a whole host of domesticated plants from other regions, but all of them combined made up only a very small part of the diet. And finally, there was another long period during which people learned how to utilize or hybridize these domesticates to such an extent that they may be considered to have a subsistence based mainly on agriculture. In the New World, there does not seem to have been a ' Neolithic Revolution ', that is the sudden development of a complex including domesticated plants, agriculture, village life, pottery, the use of ground and/or polished stone, and full-time specialists connected with ceremonial life. Judging from our Tehuacan sequence, it would appear that ground stone mortars and pestles occurred before 7200 B.C., that the first domesticated plants appeared before 5000 B.C., that villages came into existence at about 3500 B.C., pottery about 2300 B.C., full-time agriculture perhaps at 2000 B.C., ceremonialism about 1500 B.C. and polished axes at about 1200 B.C. In other words, it took some 6000 years, about half the time of the total sequence for the area, for the ' Neolithic ' traits to evolve into a single complex. This would certainly better suggest a Neolithic ' evolution ' rather than a ' revolution '. In spite of the gaps, we do then now have a number of answers to some of the plant domestication problems of the New World. There also are certain generalizations that may be made from the present limited data. Since Old World information about plant domestication is also limited, and although the particular plants domesticated in the Old and New Worlds are very different, perhaps some of the processes of domestication and apread may be similar for both. "

MAIZE

201-I. Maize or corn (*Zea Mays*) was cultivated throughout much of the Americas at the time of their discovery in the 15th cent. AD, and it, together with two subsidiaries, the gourds and beans, constituted the basic foodstuff in the areas of higher civilization in Mexico, Mesoamerica, and South America. There are many varieties of maize (dent corn, flint corn, flour corn, sweet corn, popcorn, podcorn and waxy corn), which often appear to adapt themselves rather easily to new ecological conditions. The vegetative period of maize

varies from about 90 to 190 days, and the crop requires an average temperature of about 75° with warm nights, a rainfall from 18" to 24", and a well-watered loamy soil rich in humus. It is grown extensively in the tropical lowlands and highland regions of Latin America, and it is of increasing importance in the tropical lands of the Old World. America has some areas of its high yields, for instance, the American Corn Belt, the La Plata Corn Belt, etc. It has become a major grain in such regions as eastern Java and parts of Celebes. It has great local importance in the central Philippines, where western influence has been long-standing, but it also occupies substantial areas in the northern China, and mainly in Szechwan, Indo-Burma border, and middle Gangetic Plain, as well as the hilly regions of middle India and some of the Himalayan valleys in Bhutan, Sikkim and Nepal, and in various parts of the sub-Vindhyan Peninsular region. In India the yield of maize per acre varies from 600 to 700 lbs. Maize is one of the most widely grown crops in the sub-Saharan Africa. In many areas maize-porridge is the main diet of the people. Great maize-growing areas have been developed in the Union of South Africa, Rhodesia, Kenya, etc. Maize gives such good returns for the labour spent on it that there is much free time available for activities outside the production of food. The importance of maize in the high civilizations of America can scarcely be exaggerated, since it has been calculated that a Maya Indian in Yucatan in Meso-america can grow enough of it to support himself and his family, without domestic animals, by working for 48 days in the year. This figure may vary from area to area [Bushnell, G. H. S., *Peru*, Lon. 1960, p. 41]. But, it should be noted in this connection that maize entered later into the economy of the pre-columbian American civilizations.

202-I. The New World's shift from food-collecting to agriculture was probably a long and slow development. Four oldest theatres of this important process, which was not a revolution as it was in the case of the Western Basic Farming of the Old World, have so far been recognized. The first seems to have been located in the vicinity of Mexico; the second appears to have existed in Peru; a third may well have been in the Amazon-Orinoco basin, where *manioc*, a root plant, came to be grown; and the fourth may been centered in the valley of the Mississippi. This was the stage of Incipient Cultivation { Fn 5, 1 } in which the domestication of plants was known, but in which agricultural products made up only a small part of a society's subsistence patterns. Traditionally, the oldest cultigen in the Western Hemisphere, has been traced to Bat Caves dated c. 3500-2500 BC. A stronger case for Incipient Cultivation has been advocated for the Sierra de Tamaulipas in semiarid northeastern Mexico [MacNeish, R. S., 'Preliminary Archaeological Investigations in the Sierra de Tamaulipas, Mexico', *TAPS*, 48, 6, 1958]. Later, there is definite evidence of domesticated bean followed by the appearance of primitive maize. As we get beyond c. 2000 BC there appear in the New World increasingly numerous full-scale villages, based on maize-farming; and on proceeding further with our survey, it becomes apparent that the highest prehistoric levels were attained by the Toltec-Aztec-Maya, who lived in Mexico including Yucatan, and Guatemala; and by the Incas of Peru and the vicinity. This vast area is known as Nuclear America. There are a good number of parallels between these two centers. At each end of Nuclear America high culture began with a Formative stage that started c. 1000 BC. It is held that maize was domesticated in or near the northern periphery of Nuclear America. Around 715 BC when fully domesticated maize reached Peru, many traits and influences began to move in opposite direction [Titiev, M., op. cit., pp. 342-4].

203-I. Now let us return to the theme of the first peopling of America in connection of which we have already noted certain facts related to a Proto-Indian language showing some Indo-European traces {5-I}, the passage of entry across the Bering Strait {162-I}, etc. That the Palaeo-Asiatics of northeastern Siberia (the Chukchi, the Koryak, the Kamchadal, etc.), and the American Indians of the Northwest Coast bear striking similarities, is a well-known fact, and Franz Boas went so far as to suggest that the Palaeo-Asiatics were a backwash of people from the New World who had drifted back across into Siberia ['Relationships between North-West America and North-East Asia,' *The American Aborigines*, Toronto, 1933, pp. 357-70]. He believed that the Eskimos were originated in a central Canadian region, and considered them to be late comers to Alaska and Bering Strait. The excavations of H. B. Collins on St. Lawrence Island later demonstrated conclusively that the Eskimos were already well-settled around the Strait about 2000 yrs ago ['Outline of Eskimo Prehistory', in *Essays in Historical Anthropology of North America, Smithsonian Miscellianeous Collections*, 100, Wash., 1940, pp. 533-92]. An alternative theory of first immigration into America through the Aleutian Islands was therefore advanced [Chard, C. S., '*Kamchadal Culture and its Relationships in the Old & New Worlds*', microfilm copies at the Libraries of Congress, California & Harvard Univs, 1956]. P. Drucker postulated the concept of an Eskimo substratum for Northwest Coast Culture ['Sources of Northwest Coast Culture', in *New Interpretations of Aboriginal American Culture History*, Wash., 1955, pp. 59-81]. C. S. Chard visualizes an ancient arc of related cultures and population around the entire rim of the North Pacific from Kamchatka to Puget Sound, along which individual traits may have readily diffused in either direction. He conceives of this arc as a belt of sedentary maritime peoples sharing a common cultural tradition and leading a life based on fishing and varying degrees of sea-mammal-hunting ['Northwest Coast — Northeast Asiatic Similarities: A New Hypothesis', *Men & Cultures*, ed., Wallace, A.F.C., Philadelphia, 1960, pp. 235-40].

204-I. When the European settlers came across the Atlantic to America in the 15-16th cent AD, they landed on a variety of coasts, from sandy plains to rocky cliffs. Far to the north lay the glaciated tundra, home of the musk ox and caribou (American reindeer). Inland they found the rolling hills and fertile valleys and to the west the mountains covered with forests. In the great central basin of the continent lay the prairies, deep in long grass. Further west, the land was higher and drier forming plateaus, and the plains were covered with carpet of short grass, over which the mighty herds of buffalo roamed. There were deserts waiting for men to bring water and make the dry sand burst into bloom. Tropical rain-forests covered the warm and wet regions to the south.

205-I. America is a world in itself. Although it is customory to consider North and South America as separating from the Isthmus of Panama, or an Anglo and a Latin America divided by the Rio Grande, the truth is that they are parts of a single and continous land mass that stretches between the Pacific and the Atlantic Oceans for about 9000 mls N-S from 72° N to 54° S, 3000 mls where it is widest, and 30 mls where it is narrowest in Panama. The gigantic Rockeys-Andes fold-axis, a part of the Circum-Pacific Zone, running N-S along the Pacific and belonging to the same Tertiary orogeny of the Alpo-Himalayan (the Alpine-Mediteranean-Trans-Asiatic Zone) system of the Old World {154, 157-I}, forms the backbone of America. The continent has three main physiographic divisions in the north: (i) the Western Cordillera comprising the partially submerged Coast Range; the Inner Pacific Range

known as the Cascades in Canada, the Siarra Nevada in California, and the Western Sierra Madre in Mexico; and the lofty Rockies that have between themselves and the Sierras a series of plateaus (Columbia where whaling, fishing and mining of gold and coal are important; the Snake Lava Plateau; the Colarado Plateau and Mexican Plateau) and intermontane basins (the British Columbia plains, the Great Basin, etc.); (2) the Central Lowlands divided into the Hudson Bay (Laurentian) Shield, Mackenzie River Basin, the Prairies, the Great Lakes and St. Lawrence Basin, the Mississippi Basin and the Gulf Plain, and; (3) the Appalachian Mountains. In Mexico we find, south of the plateau rich in iron and coal, the isthmus of Tehuantepic famous for sulphur, and the Yucatan Peninsula, where sisal-hemp is cultivated. Two separate mountain systems occur in the isthumus which are cut across by a lateral chain of volcanoes, and are lastly reduced to a single low range that forms further south a link with the Andes and there we reach South America.

206-I. The Mexican plateau, bordered in the west by the Seirra Madre Occidental, an extension of the Rockies', and in the east by the Sierra Madre Oriental, is covered by mesquite-studded grasslands occasionally approaching the desert conditions. It was the homeland of hunters and collectors during early times, but later gave rise to a great civilization of antiquity, whose origin and development are still shrouded in mystery. The plateau attains a height of 6000 near Mexico City, which is the 6th largest city of the world and the oldest one in North America having built upon the ruins of the Aztec capital Tenochtitlan. The valley of Mexico (3000 sq. mls) where the Aztec Empire arose together with its great monuments, was once covered by a prehistoric lake on which the Aztecs had their *chinampas* (floating gardens). Other important portions of the Mexican highlands are the Sierra Madre del Sur, its steep escarpment fronting the Pacific shore-line in southern Mexico; and a mountainous upland Oaxaca separated from this difficult terrain by the Isthmus of Tehuantepec, the southeastern highlands form a continuous series of ranges from Chiapas down through Maya territory into Central America. The lowlands are confined mainly to narrow strips along the coasts, of which the most important is the plain fronting the Gulf of Mexico. Of alluvial origin, this band of flat land extends unbroken from Louisiana and Texas down through the Mexican states of Tamaulipas, Veracruz, and Tabasco to the Yucatan Peninsula. It has played a critical role in the development of food-producing economy in the New World which promoted the settled life and the growth of civilization in Mexico; the civilization that reflects a pattern on which the Old World Eastern Basic Farming Economy was built up, and in this respect both the Basic Southeast Asian and the Basic American economies jointly stand in a contrast to that of the Old World Western Basic Farming Economy, as we shall see later. The temperatures in the lowlands are thoroughly torrid throughout the year and the summer precipitation quite heavy, which has given rise to growth of evergreen canopies and lush growth of the fully developed rain forest. Dotting the lowlands are patches of savannah which are of no use to the ploughless Mexican farmer.

207-I. Various modes of food-getting have developed in the above surroundings in Mexico. Highland farmers are quite efficient about their land, since only a moderate period of fallowing is necessary, and is occasionally supplemented by manuring and a primitive mode of irrigation. On the other hand, lowland cultivators, faced with immense forests, the low potential of soil, and winter desiccation, practice shifting-cultivation or milpa {4-I, 2}. Game abounded in ancient times in Mexico. It comprised the white-tailed deer, the collared peccary, the tapir (a long-nosed pig-like animal), the howler and spider monkeys, the jaguar (=

Indian *chitta*), waterfowl and wild turkey. There were no domesticated animals for draught, and the wheel was unknown, so the pre-Columbian Mexicans had to use the human back for transport of goods. The dog and turkey only were tamed. High on the hill-flanks that fringe the Valley of Mexico are visible the raised beaches left by the shrinking lake that reflect the past climates of the region in relation to human process.

America was severed artificially in 1914 when the Panama Canal was opened.

208-I. Two chains of volcanic ridges and peaks, one in the West Indies, and another running across El Salvador, Nicaragua, Costa Rica and Panama, stretch into western Columbia, and the system rises further south into the great Andes. The land surface is sharply split up by the Andes chain of mountains, running from the Caribbean Sea to the Terra del Fuego in the far south for 4400 mls as the longest continous land barrier in the world, and as the second highest mountains (average, 13,000′) on the earth after the Himalayas, with its highest peak Mt. Aconcagua, 23,003′, in Argentina. South America consists mainly of three highlands (the Andean folds, the tilted block of the Brazilian Plateau, and the Guina Highlands) and three lowlands (the Orinoco basin, the Amazon Basin, between Guiana high-lands and the Brazilian Plateau, and the Parana–Paraguay Lowlands continuing southward between the Andes and the Brazilian Plateau as the low plateau of Patagonia). The western Andean chain is generally known as La Cordillera, but among the peoples of Columbia, Peru and Bolivia, the eastern range is called the Cordillera Real de Los Andes, whereas in Chile and Argentina the former chain has the name of the Cordillera de Los Andes. In between the two parallel ranges lie great intermontane plateaus out of which the mountain-rimmed Altiplano, shared by Peru and Bolivia, stretches for 500 mls in length, and 80 mls in breadth at an average elevation of 12,000′. It is divided into six basins which contain the larger part of the habitable area of highland Peru. They are charming great valleys from 8000′–11000′ in altitude, fertile, well-wooded having perennial streams and grassy fields, and numerous towns, for instance, Cajamarca, Callejón de Huaylas, Huánuco, Mantara, Cuzco and Titicaca. The highest and most remarkable, however, is the basin of Titicaca, the highest (12,506′) navigable lake in the world occupying an area of about 5330 sq. mls. The basin is divided between Peru and Bolivia and contains the great early archaeological site of Tiahuanaco. The Bolivian Altiplano surrounding somewhat warmer Titicaca basin, is a cold, dreary, treeless *puna* (13000′), virtually a tundra or cold desert. Being too high for maize cultivation, the main dependence of its population has been on potato. This is the homeland of the llama and the alpaca, the only domesticated American animals, and their herders, the Aymara Indians, one of the main ethnic elements of the Inca Civilization. To the west lies the coastal plain on the Pacific, one of the great deserts of the world known as the Atacama, where there are miles of scorched rocks and crescent-shaped sand dunes. Life would be impossible here were it not for the green river valleys which cross it, where the ancient peoples irrigated an area greater than their successors ever did. A short distance inland rise the foot-hills of the Andes overlooked by La Cordillera, which is adorned with snow-capped peaks of great altitude. Many of these valleys are household words in Peruvian archaeology, among them being Chicama, Moche, and Viru in the north; Chancay in the centre; and Chincha, Ica and Nazca in the south. The valleys are separated by desert strips and rocky spurs, with the result that the culture of each valley developed to some extent in isolation, though as time went on, some tribes were able to subjugate their neighbours. About the area east of the Andes there is little to say. The ground falls rapidly from altitudes

of the order of ten thousand feet to generally less than a thousand, and the earth is covered with tropical forests; and these form an insuperable bar to the milpa cultivation, which was the basis of life both in the highlands and the coastal plains, i. e, the Sierra and the Atacama. Even at the maximum extent of the Inca Empire, the hold of the highland peoples was confined only to a small part of the Amazon Basin.

THE AMERICAN INDIAN CULTURES

209-I. Nomadic hunting and gathering people { 4-I. } of North and South Americas are broadly similar to one another. Characteristically, they all lacked farming, pottery, metallurgy, loom weaving, permanent settlements, priests, social classes, and state organization. These nomad hunter-gatherers occupied principally the extreme northern and southern latitudes of America, but their environments were extremely varied. Socially the hunting people of the California-Great Basin Area (Klamath, Modoc, Shoshoni, Pomo, Paiute, Ute, Mohave, Yokuts, etc.) and of Terra del Fuego (Ona, Yahgan, Fuegians, etc.) were similar in their patrilineal band-patterns, and the shellfish-gathering Indians of the Chilean archipelago resembled the seed-gathering Shoshonis of Nevada in their simple family groups. The Fuegians who had little contact with developed civilizations, were builders of plank-boats, a skill in which pre-Columbian Americans did not excel. The Amazonians are known especially for their spartan initiation rites for boys. Maize was known, but it did not flourish in this environment. Instead, manioc or cassava furnished the principal bread product to the Tupi, the Carib, the Ge, the Tapuya, the Jivaro, the Boro, and other forest folks. Rubber is native to this area. The blowgun was more common than the bow among the Amazonians. Hammock was also their invention. " Noting this whole jungle culture { of Amazonians } ", states W. Howells, " to be a trimmed-down version of that of the great central area, you might compare it thus with Melanesia's relations to Southeast Asia. You might also note a sort of general resemblance in nature and a number of strong likenesses between the Amazon and Malaysia as well (e. g., head-hunting, blowgun, etc.), without jumping to conclusions about contacts" [*Man in the Beginning*, Lon, 1956. p. 296]. The bison hunters of the high plains of North America were apparently much like the guanaco-hunting Puelches of the pampas and Tehuelches of Patagonia, especially before both peoples acquired horses from Europeans. But there are no parallels in South America to the specialized arctic culture of the Eskimo, the Caribou-hunting bands of the modern Athabaskan and Algonquian peoples, and the fishing villages of the northwest coast of Alaska and British Columbia. Although the Chilean archipelago resembles the Northwest Coast of North America, it has very few fish. On the other hand, in South America a number of specialized nomadic types are represented among the Ge Indians of the arid east Brazilian plateau and by the seed gatherers of parts of the Gran Chao: [Collier, J., *Indians of the Americas*, NY, 1947: Bannon, J. F., *History of the Americas*, NY, 1952 : Steward, J. H., & Faron, L. C., *Native Peoples of South America*, NY, 1959, etc.]. Howells places this stage of human process in America in the Mesolithic, which is rather equivalent to the Archaic Stage of Willey and Phillip's scheme { 116-191-I. }.

210-I. " The Gochise Indians of southern Arizona and New Mexico", continues William Howells, " had a continuous culture of several thousand years which evidently depended strongly on the gathering of vegetables and seeds, which they ground on stone slabs. This is the process which must have produced a great many local and special cultures of hunters and gatherers all over the Americas, such as that of our own recent Great Basin Indians, between the Rockies and the Sierras, who made staple foods of piñon nuts, grass seeds and grass

-hoppers { 12-I }, or that of the people of Tierra del Fuego, where the Onas and the Yahgans had two quite different hunting systems (shore and shell-fishing *vs.* upland hunting) in the same general area. The Yahgans probably invented canoes independently.... So there is indeed a suggestion of the Mesolithic Europe, and ' Mesolithic ' is what we might best call these later American hunters " [*Man in the Beginning*, Lon, p. 278].

211-I. Let us turn to the people practising another system of hunting. " The people of the Pacific shore ", writes further Howells, " take the rule about hunter-gatherers being nomadic and break it into little pieces. Even farmers using slash-and-burn { milpa } agriculture usually must move their villages periodically, but along the Pacific the sources of food were so dependable that the people could build villages of ' Neolithic ' size and stay in the same place continuously { to the advantage of the archaeologist }, and this naturally, allowed a ' Neolithic ' kind of social organization ". [*Man in the Beginning*, Lon, 1956, pp. 279-80].

212-I. North of California, up the northwest coast of Alaska, there is a complicated shore of inlets, sounds, and islands bearing a growth of magnificent timber. From the Salish in the south through such peoples as the Nootka, the Kwakiutl, the Bella Coola, and the Haida, to the Tlingit in the north, the people have a striking culture and a vigorous art, both notable for their work in wood. They live in villages along the shore in large gabled houses of planking like those typical of Southeast Asia, with totem poles. They use dug-out canoes which, for war, may hold up to fifty paddlers. Nowadays they work in canneries, but they used to support themselves on the bountry of the sea, especially on salmon, but also on halibut, herring, cod, clams and oysters. Drying and smoking allowed them to stock these foods for the whole year, the key to a settled existence. [Forde, C. D., *Habitat, Economy & Society*, Lon, 1956, pp. 69-100]. " The culture has its oddities ", states Howells, " compared to other American Indian cultures. It has the Raven myths, composite bows, and body armor made of rods, things also found among the Paleo-Siberians. It lacks a list of things common in the rest of America, such as moccasins, chipped stone work of shields, as well as agriculture, except for tobacco, and pottery which is here replaced by basketry, as in California, and by excellent wooden containers. It has its own peculiarities, including woven hats with spindle tops, and cloth made from bark. This all suggests an isolated development ....and also points to some recent contact with the Old World conceivably through the Aleutian Islands." [*op. cit.* pp. 281].

The above is the basic stratum, equivalent to the Archaic stage of Willey and Phillip's { 116, 199-I } generally-accepted scheme of the American Indian civilization, which after having given rise to urban institutions, imperialism, and socialism in course of time, has persisted through various crises of acculturation and deculturation, to our own times.

213-I. Gathering (Fn. 4) and production of food (Fn. 5) are two chief food-getting techniques of mankind. Gathering techniques cosisting of three activities, i. e., collecting, hunting, and fishing involve utilization of the resources of the environment as nature offers them to man. Producing techniques include cultivation of land and caring for domesticated animals. Gathering was indeed the original food-getting technique of mankind which continued during the Palaeolithic and to an extent during the Mesolithic stages. Production of food has, as we have seen { 11-15-I }, marks an advance on the gathering economy; the advance that has indeed revolutionised the human history by enabling man to produce food-surpluses to

support a large number of craftsmen, soldiers, aristocrats, administrators, artists, scientists, philosophers, priests, etc., and by making living a sedentary affairs in permanent settlements in villages and towns { 75, 87, 88, 91-I }. But this happened when food-producing techniques reached the stage of plow agriculture (plough cultivation aided by irrigation and animal power) { Fn. 5, 3 } after that of horticulture { 39-44. I } or incipient agriculture { Fn. 5. I }. The intensive manual agriculture was not the transitional stage between these two forms of cultivation of land. The incipient agriculture in which digging stick is used gave rise to the plow agriculture (the term 'agriculture' means generally the plow agriculture, as against 'horticulture', in which the intensive manual power is employed) in the Old World Western Basic Farming Region and to the intensive manual agriculture or horticulture in the Old World Eastern Basic Farming Region. In the former region the intensive manual agriculture or horticulture, as the term is generally empoyed in this sense throughout this study, could have hardly given rise to town-life and civilization. But thanks to the higher yields of rice and maize, as compared to wheat and barley, these cereals were also capable of developing urban institutions in Southeast Asia and America, even under the system of intensive manual agriculture. The Plow agriculture could not develop among the Southeast Asian and North American Indian Basic Farmers, because they had no domestic animals for industrial purposes. Further, terrace-cultivation, which is so characteristic of the terrains of both rice and maize farming, does not facilitate the movements of an animal-driven plow in such fields.

214-I. We have incidentally taken note of controversies between the two groups of Americanists, the 'Isolationists' and 'Diffusionists' { 5, 84, 164, 166, 174, 191-2, 196-I, etc. }. This state of schism covers, as a matter of fact, the entire range of human protohistory, and some experts have always remained divided into these two rival schools.

ISOLATIONIST AND DIFFUSIONIST SCHOOLS OF THE INTERPRETATION OF HISTORY

215-I. In the later half of the 19th century anthropology began to develop 'historical approach' in which the movement known as the 'lineal evolutionism' ('lineal' because it emphasizes a straight-line course of development for all human societies; it is also called 'parallelism' because it posits that all societies, even if completely isolated, would parallel each other's evolution) was pioneered by J. F. Mclennan [*Primitive Marriage*, Lon, 1865], E. B. Tylor [*Primitive Culture*, 1865; *Researches into Early History of Mankind and the Development of Civilization*, 1871; *An Introduction to the Study of Man and Civilization*, 1881], and L. H. Morgan [*Ancient Society*, 1877], to which J. K. Bachofen [*Das Mutterrecht*, stuttgart,1861], A. Lang [*Myth, Ritual and Religion*, 1887; *The Making of Religion*, 1898; *Social Origins*, 1903], A. C. Haddon [*Evolution in Art*, 1895], D. G. Brinton [*Religions of Primitive People*, 1897] and a few others made important contributions.

"To proceed from the known to the unknown" is the maxim which Sir E. B. Tylor gave to both archaeologists and anthropoligists. His greatest contribution was the study of primitive religion [*Primitive Culture*, 1861]. We have already taken note of Tylor's minimum definition of religion { 60-I } and L. H. Morgan's { 116-I } developmental 'statures' or stages.

The three outstanding elements that can be distinguished in the studies of the linear evolutionists are : (1) The history of mankind represents a *unilinear sequence* of institutions and beliefs, the similarities between which reflect the principle of the psychic unity of man;

(2) the evolutionary sequence of living human institutions and beliefs are assumed to be the living exponent of earlier stages of culture through which the more advanced societies are held to have passed: (3) and the survivals to be taken as evidence that such societies have passed through earlier stages and their customs, in vestiginal form, appear in their present ways of life.

216-I. The docrine of linear evolution was taken also to the political field. The works of L. H. Morgan, who was an American capitalist living at Rochester, New York, was read by Karl Marx, 1818-83, and formed the basis of the Socialist classic, *The Origin of the Family, Private Property, and the State*, written by Marx's literary executor, F. Engels. The hypothesis of Morgan's statures was transmutated into a doctrine of hope for the underprivileged. In this political sense, social evolution meant that the path to the economic democracy of the socialist order was to be traced from savagery (Pre-clan) through barbarism and beyond the industrialized (Class) societies of our times.

217-I. Those 19th-century cultural evolutionists were more of social philosophers than empirical scientists, except, to an extent, in the case of Morgan. According to them at every stage of its evolution from simple to complex, culture had left survivals. Australian aboriginal culture was put at the early end of their sequence. But " cultures do not fossilize ", writes J. J. Honigmann, " they constantly change. It is quite true that the general form of certain elements in a way of life may persist over long periods. The alphabet has persisted for some 2000 years in its fundamental pattern. On the other hand, no existing alphabet, living religion, form of marriage, contemporary form of the plow, bow, or house can be taken as accurately mirroring the original form of that element. To know the past requires clear-cut evidence either in the form of historical documents or in the form of the remains excavated by archaeology " [*The World of Man*, NY., 1959, p. 24].

218-I. There arose in course of time a movement against the liner evolution, in view of the absence of the presumed intermediary of a Bronze Age in the sub-Saharan Africa between the ages of stone and iron; the Hawaian society, presumed to have maintained atavistic remnants of a primordial marriage system, was in fact far advanced in matters of horticulure and political organization; and that the alien and atypic culture traits can diffuse widely, through migration, borrowing, acculturation, education, or by force. Sir J. G. Frazer was the first to criticize openly the linear evolutionst school. He initiated the idea of culture-diffusion. He postulated three developmental stages through which all societies pass, viz., magic, religion and science. Various diffusion theories were propounded, for instance, those by W. H. R. Rivers [*The Todas*, 1906], Sir G. Elliot Smith [*The Ancient Egyptians & the Origin of Civilization*, 1911 : *In the Beginning*, 1932], W. J. Perry [*The Children of the Sun*, 1923], and H. S. Gladwin [*Men out of Asia*, 1947].

219-I. Sir Elliot Smith sponsored the Heliolithic school among the diffusionists. He assumed that comparable cultural elements in the Mediterranean Basin, Africa, the Middle East, and India were of Egyptian origin, but also that those of Indonesia, Polynesia, and the Americas were similarly derived. A more elaborate presentation of this theory came from Perry. He dealt with the complex of traits that was assumed to have originated in Egypt, and with such other elements as mummification, the erection of great monolithic monuments, the building of pyramids, high value set on gold and pearls, and a dual organization of society, to have

diffused everywhere 'civilization', is found in the world. The particular element Perry selected to symbolize this complex was the Egyptian belief that the ruler is descended from the Sun. The controversy Illiot Smith engaged in over the carvings on Mexican monuments, the Stela B at Copan, is noteworthy. They were elephants according to Smith and he held on this basis that there were contacts of Mexico across the Pacific with India, and Indonesia. He attempted to show that there was a time when elements of Egyptian culture, translated into the phenomena of the life of India, travelled to South America, where the Inca as the Sun-god could be equated to the Egyptian custom [*In the Beginning*, 1946, pp. 32, 44, 70, 80-3, 91-8].

220-I. Meanwhile, geographers, too, began to be attracted to this theme. Out of various groups of geographers that arose in various countries of Europe to deal with it, the one pioneered in France by Paul Videl de la Blache who died in 1860 [*Principles de Geographie Humaine*, 1917-18, trans., Bingham, M. T., *Principles of Human Geography*, Lon., 1926], became more prominent, exercising much influence also in Britain, where H. B. George had already published *The Relations of Geography and History*, 1901. Sir Cyril Fox took the lead of the movement in Britain [*Personality of Britain*, Lon. 1932].

221-I. In Germany Gustaf Kossina, 1858-1931 ["Der Goldfund von Messingwerk bei Eberswalde", *Mannus Bibl.*, 1913; *Ursprung und Verbreitung der Germanen in vor-und fruhgeschichtlicher Zeit*, 1926, etc.] built up a pan-Germanic school which cherished the idea, taken from the historian Sybel, that a nation which fails to keep in living touch with its past is as near to drying up as a tree with severed roots [*op. cit.* p. 104]. Kossina was a pioneer, because, vitiated through much of his work was a preoccupation with Nordicism, he at least, made clear his interest in the peoples rather than with the mere periods of prehistory, as well as by the use he made of distribution maps demonstrating the possibility of studying prehistoric settlements. The publication in 1925 of V. Gordon Childe's *The Dawn of European Civilization* showed the possibility of this new approach. Meanwhile, the rapid progress made in the years immediately following the First World War in documenting antiquity of the settled life and even of literate civilization itself in Egypt and Western Asia had made it evident that the later prehistoric [protohistoric] cultures of Europe were of secondary growth, relatively recent developments in a region which in those days was marginal and backward, so that Childe was able to show that many of the leading developments chronicled in his *Dawn* — such as the spread of farming and metallurgy — were the products of impulses emanating from the centres of ancient civilizations (Babylonia, Egypt, etc.) [*Archaeology & Society*, 1957, p. 34-5].

222-I. A rather subtler theory of diffusionism, the *Kulturkrieselehre* (culture-area), known also as the Kulturhistorische schule (culture-history school), was sponsored by Fritz Graebner [*Methode der Ethnologie*, 1911], Wilhem Schmidt (*The Culture-Historical Method of Ethnology*, tr. 1939). The theory consists of a belief in evolution tempered with diffusion. The greater the number of similarities, according to them, the more likelihood there is of borrowing having occurred. This is why, for example, folktales can be used so effectively in the study of historical contact between nonliterate peoples.

223-I. Researches of Franz Boas [*The Central Eskimo, 1888* : *The Jesup North Pacific Expedition*, 1899 : *Tsimshian Mythology*, 1909 : *General Anthropology*, 1934 : *Race, Language & Culture*, 1940, etc.] and his team of students, among which were O. T. Masson [*Women's

Share in Primitive Culture, 1894; *The Origin of Inventions*, 1895], A. A. Goldenweiser [Totemism, *an analytical Study*, 1910], C. Wissler [*Man & Culture*, 1923], P. Radin [*Primitive Religion & its Nature & Origin*, 1937], F. G. Speck [*Naskapi*, 1935], R. B. Dixon [*Oceanic Mythology*, 1916 : *The Building of Cultures*, 1928], R. H. Lowie [*Primitive Society*, 1920 : *An Introduction to Cultural Anthropology*, 1934, etc.], A. L. Kroeber [*Anthropology*, 1923 :), E. Sapir (*Language*, 1921], and others, stood up in sharp contrast to the Linear Evolutionists. The studies of diffusion initiated by Boas form, indeed, a bridge to our consideration of accultuation.

Clark Wissler formulated what is known as the 'culture-age-area concept', ["The Culture-Area & Age-Area concepts of Clark Wissler", *Methods in Social Science*, 1931, p. 248]. It arose actually, like the Danish Tripartie Age System in archaeology, as a way of arranging cultural data in museums, and rests on two assumptions :— (1) that culture traits tend to diffuse equally in all directions from their point of origin; (2) that the area over which a trait has diffused gives some indication of its age relative to other traits diffused within the same area. M. J. Herskovits ["The Process of Cultural Change", *The Science of Man in the World Crisis*, ed., Linton, R., 1945, pp. 143–70] has set up such age-area culture regions for the sub-Sahran Africa; Ralf Linton for Madagascar ["Culture Areas of Madagascar", *American Anthropologist*, XXX, 1928, pp. 363–90], R. S. Naroll ["A Draft Map of Culture Areas of Asia", *Southwestern Journal of Anthropology*, X, No 1, 1954, pp. 44–65] for various parts of Asia.

224-I. Much criticism has been levelled at the Age-Area Theory of historical reconstruction [Dixon, R. B., *The Building of Cultures*, 1928, pp. 145–6 : Hodgen, M. T., "Geographical Distribution as a Criterion of Age", *American Anthropologist*, XLIV, 1942, pp. 351–68 : Cooper, J. M., "Temporal Sequences of Marginal Cultures", *Catholic University of America, Anthropological Series*, X : Collins, H. B., "Culture Migrations & Contacts in the Bering Sea Region", *American Anthropologist*, XXXIX, 1937, pp. 375–84 : Wallis, W. D., *Culture & Progress*, 1930, pp. 75–6; etc.]. It has been pointed out that culture-traits rarely, if at all, diffuse equally in all directions from their center of origin. Geographic and social factors may impede the spread of a trait in one direction.

225-I. Challenge again came to the evolutionists and this time it came from the functionalists[33] under Bronislaw Malinowski ["Culture", *Encyclopaedia of Social Sciences*, IV, 1931, pp. 621–46; *The Dynamics of Cultural Change*, 1945] and Radcliffe-Brown [*The Andaman Islanders*, 1933; "On Social Structure", *J. Royal Anthropological Soc.*, 70, 1940, pp. 1–12]. Both were inspired by E. Durkheim [Elementary Forms of Religious Life, 1915] and the French School of Sociology. As Malinowski sees it (Functional Theory), "men everywhere must satisfy seven basic biological needs, if they are to survive; metabolic, reproductive and the needs for body comfort, safety, movement, growth and health. To each of these, in every society in the world, we find some kind of cultural response, listed, respectively, as a commissariat, a system of kinship, shelter, means of production, activities, trainning, and hygiene. The routine needs of living are everywhere indissolubly bound to organized and ever-present routines of satisfaction, otherwise human society could not exist. The needs are divided into

33- Sociological orientations have been labeled *functionalist*, in view of their concern with the working of society and the functions performed by the institutional elements. This social functionalism is not to be confounded with the structural-functional theory of the field of linguistics.

four cultural imperatives; the economic, the social institutions, education, and political organization.

Malinowski's view of culture is distinctive for his use of the concept of function and his emphasis on a non-historical approach to the understanding of cultural phenomenon. It is this latter feature that appears to link Malinowski to Radcliffe-Brown [" Methods of Ethnology & Social Anthropology; *South African Journal of Science*, XX, 1923; " The Present Position of Anthropological Studies ", *Report of the Centenary Meetings of the British Association for the Advancement of Science*, 1932, etc.]. The work of Malinowski and Radcliffe-Brown has turned many anthropologists in America from the earlier concentration on historical studies to a new interest. This is reflected in Ralf Linton's analysis of four culture traits [*The Study of Man*, 1936; *The Cultural Background of Personality*, 1945; *The Tree of Culture*, 1955], viz. form, use, function and meaning.

226-I. Anthropology and psychology have not generally been in closer contacts. Early writers examined the psychology of primitive man [Lévy-Bruhl, L., *Primitive Mentality*, 1926], but they had little influence on the main current of anthropological thought. When P. Radin published his *Crashing Thunder* in 1926, the autobiography of a Winnebago Indian, this was an innovation. Sigmund Freud himself turned to anthropology [*Totem & Taboo*, 1903; *Civilization & its Discontents*, 1930] in an effort to account for the Oedipus complex (An emotional conflict which involves repressed hate for the parent of the same sex and repressed love for the parent of the opposite sex) — a kind of myth of aboriginal sin. This stimulated an interest in the cultural aspect of psychodynamics [Sapir, E., " The Unconscious Patterning of Behaviour in Society ", *The Unconscious, a Symposium*, ed., Dummer, E. S., 1927, pp. 114-42; Mead, Margaret, *Coming of Age in Samoa*, 1930; *Sex & Temperament in Three Savage Societies*, 1935]. Taking their dictum from Freudian psychology, that the first five years of life lay down the basic patterns of individual behaviour, Linton made clear the crucial importance of psychological studies to cultural understanding and collaborated with Abram Kardiner [*The Individual & His Society*, 1939; *The Psychological Frontiers of Society*, 1945]. After examining a series of cultures, they formulated the concept of the basic personality as continuing unmodified through great stretches of time in the Western civilization from the beginning of the Judeo-Christian history.

227-I. The Neo-evolutionism is the label given to the latest main developments in the field of anthropology with J. H. Steward [Handbook of South American Indians, ed., 1946; " American Culture History in the Light of South America ", Southwestern Journal of Anthropology, III, 1947; " Evolution & Process " *Anthropology Today*, ed. Kroeher, 1953, pp. 313-26; " Introduction ", The Irrigation Civilization, a Symposium on Method and Result in Cross-Cultural Regularities, " in *Irrigation Civilization : a Comparative Study* : 1-5, 1955], Gordon V. Childe [*The Dawn of European Civilization*, 1925; *The Aryans*, 1926; *The Danube in Prehistory*, 1927; *The Most Ancient East*, 1928; *The Bronze Age*, 1930; *New Light on the Most Ancient East*, 1934 & 1942; *Man makes Himself*, 1936; *Prehistoric Communities of the British Isles*, 1938; *What Happened in History*, 1943 & 1946; " Archaeological Ages as Technological Stages " *J. Royal Anthropological Institute of Great Britain & Ireland*, LXXIV, 1944, pp. 7-24; *Progress & Archaeology*, 1944; *Social Worlds of Knowledge*, 1949; *Social Evolution*, 1951; What is History ?, 1953; *Piecing together the Past*, 1956; *The Prehistory of European Society*, 1958; etc.], Karl A. Wittfogel [*Geschichte der bürgerlichen Gesellschaft*, 1924; *New Light on Chinese Society*, 1938;

Mao Tse-tung, Liberator or Destroyer of the Chinese Peasants ?, 1955; " Hydraulic Civilization ", *Man's Role in Changing the Face of the Earth*, 1956, pp. 152–64; *Oriental Despotism : A Comparative Study of Total Power*, 1957], L. White [*AA*, XLVII, 1948], R. Redfield [" Culture Contact without Conflict ", *American Anthropologist*, XLI, 1939, pp. 514–7; *The Folk Culture of Yucatan*, 1942; *Primitive World and its Transformations*, 1953; *Present Societies & Culture*, 1956, etc.] and others as its leaders. Steward, who calls it the universal evolution, states that this approach treats culture as a whole rather than particular cultures [*The Science of the Culture*; 1949; pp. 368]. Childe expresses much the same view when he writes that the multiplicity of cultures revealed by ethnographic and archaeological research is a handicap, if our objective is to establish general stages in the evolution of cultures. Therefore, in order to discover general laws descriptive of the evolution of all societies, we must omit or discount the features puculiar to particular habitats or environments [*Social Evolution*, 1951, p. 35]. White in general follows Morgan. He advocates to study the evolution of culture and to determine, not only the sequences of cultural development, but also the factors which are responsible for them. He finds this factor in the concept of energy, and formulates a law of cultural evolution. "... culture develops when the amount of energy harnessed by man per capita per year is increased; or as the efficiency of the technological means of putting this energy to work is increased; or as both factors are simultaneously increased " [" *Energy & the Evolution of Culture* ", American Anthropologist, 45, 1943, p. 338].

228–I. In order to exemplify the working of his Energy Theory, White applies it to Morgan's three socio-cultural ' statuses ' [116–I] in the following manner :—

(1) In the stage of savagery man has occess only to the energy of his body, exept casual and rare use of fire, wind and water. His culture therefore is limited, both in technology and social organization, as is illustrated by such nonliterate peoples as the Australian aborigines. Archaeology makes it clear that at one time all men were in this stage of cultural development, i. e., during the Palaeolithic period (c. 10,00,000–10,000 BP). During this time, culture evolved only as technology (the means whereby energy is expended) increased in efficiency, i. e., as new tools and devices were invented. Today, though culture *per se* has evolved far beyond savagery, there remains some peoples whose cultures, still dependent on human energy alone, are even now in the stage of savagery. The savagery thus does not denote a period in the history of culture, but a stage of cultural evolution.

(2) In the course of the barbarism began the domestication of plants and animals, marking the availability of a new source of energy. " ....when man first domesticated animals ", writes White, " and brought plants under cultivation, he harnessed powerful forces of nature, brought them under his control, and made them work for him....Thus the difference between a wild plant and animal economy and a domestic economy is that in the former the return of an expenditure of human energy, no matter how large, is fixed, limited; whereas in agriculture and animal husbandry the initial return for the expenditure of human energy augmented itself indefinitely " [*Ibid*, p. 341–2]. Agriculture, which White considers more important to the evolution of culture than animal domestication, " .... increased tremendously the amount of energy per capita available for culture-building, and as a consequence of the maturation of the agricultural arts, a tremendous growth of culture was experienced....and the great cultures of China, India, Mesopotamia, Egypt, Mexico, and Peru came rapidly into being " [*Ibid*, p. 343].

(3) Within barbarism, culture continued to evolve but only through technological gains — the addition of metals to stone for tool-making, the invention of the plow, the arch, the calendar, writing, and numerous other devices. But no energy source appeared until the beginning of the nineteenth century and the Industrial Revolution (1770-1870) when man first discovered how to apply the energy from the burning of coal and other fuels to the driving of his machines. It is this discovery — not, as Morgan and Tylor thought, the invention of writing[34] — that marks, according to White, the third stage of cultural evolution, or "civilization".

229-1. White [*The Pueblo of Santo Domingo*, 1935; *The Science of Culture*, 1949] has emphasized further that one important consequence of cultural evolution is the progressive increase of the amount of energy put under control for utilization by men ["Energy & the Evolution of Culture", *American Anthropologist*, 45, 1943; Cottrel, W. F., *Energy & Society*, 1947]. The potential daily average energy output of a healthy man is estimated as equal to approximately 50 lbs lifted 1 foot in 1 second, or rougly 1/600 th of a horse power hour. Counting children, the sick, and feeble adults, the daily amount of energy per capita available in the earliest society was approximately 1/1200 th of a horse power hour per person. For a very primitive local group this would amount to an energy utilization of no more than 1/24th of a horse power hour of energy a day for the entire society. Not much could be accomplished with that productively. So long as man was confined to such a level, the development of culture was distined to be limited. This condition obtained throughout the Palaeolithic period and was characteristic of all societies before the development of food-producing technology (agriculture). The great revolution of the Neolithic Age invisaged the domestication of plants (cultivation) and animals (herding). Domestication of plants increased man's control over solar energy, which is stored in plants. Domestication of animals made him an exploiter of animal energy. More efficient tools reduced energy waste and new tools made possible new applications of energy. All culture expanded rapidly: the mode of life changed from that of hunters to horticulturists and pastoralists. Old institutions and customs went down and new ways had to be worked out. *The savages thus become barbarians*. The Metal (copper and iron) Age is an extension of the Neolithic, which fulfilled its potential in the Urban Revolution. Metal was substituted for stone. Increased efficiency in tools leading to stepped-up productiveness in handicraft industries and horticulture, which later the plow transformed to agriculture, gradually expanded the cultures of the Old World. The next cultural stage, i. e. the Industrial Revolution-I awaited the harnessing of steam, the invention of the internal-combustion engine, and the artificial production of electricity. With this Industrial Revolution-I, feudalism gave way to modern capitalism. The reorganization of society and culture shook the modern world. According to Millikan's estimates ["Science & the World Tomorrow," *Scientific Monthly*, 37, 1939, p. 211] of about 13½ horse power hours of electric and internal-combustion energy per day person are used in U. S. A. In 1945 Einstein propounded the theory of the equivalence of mass and energy ($E=mc^2$) indicating that 1 kilogram (2.2 lbs) of matter, if it could be converted entirely into energy, would release 25 billion kilowatt-hours of energy, or approximately 33 billion horse power hours. Splitting the uranium atom converted

34 - The Peruvians achieved the stage of civilization without developing writing. Philip Bagby therefore advanced the view that the writing is not a necessary trait of civilization [*Culture & History*, 1953, p 163].

0·1 of 1% of the uranium mass into energy, 33 million horse power hours of energy could then be released from 1 kilogram uranium. And this was just the beginning of the Second Industrial revolution.

230-1. " What do the laws of evolution " writes E. A. Hoebels [*The Political Organization & Law-ways of the Comanche Indians*, 1940, *The Laws of Primitive Man*, 1954], " teach us as to the meaning of the new outburst of energy ? As the Neolithic technologies induced a thorough-going revision of previously existing societies and drove the expansion of culture ahead in a great spurt, as the technological innovations of the Industrial Revolution forced similar alterations in the ways of men, so the Atomic Age will be one in which old modes will become quickly outworn. We are destined to see such cultural changes in the new era that has burst upon us as will make all prior evolutionary development seem static by comparison. Physically and neurologically there has been little evolutionary development in the human stock for 50,000 years and more. Radiation does strange things to the germ plasm. A notable increase in gross mutations results therefrom. Mutation produces monstrosities, but it may also produce traits that break through the ceiling of present known aptitudes and capacities of man. It may well be that a new order of men is in the offing as a new level of culture. religion, and other integrating factors. [*Man in the Primitive World*, 1958, pp. 620-1]. These interrelated institutions do not have unlimited variability, for they must be adapted to the requirements of subsistence patterns established in particular environments, they involve a cultural ecology ". (Ibid, p. 330-8).

231-1. Steward has formulated five major developmental stages as an alternative to Morgan's scheme, as indicated earlier { 116-1 }. [35] They are as under { for American sequence, see, 212-1 } :—

(1) **Pre-agricultural Era** — It includes all the Old World Palaeolithic and Mesolithic periods which lacked farming, and the New World pre-agricultural periods. To judge by the simple remains of these periods as well as by the recent hunting-and-gathering cultures, the technologies were devoted mainly to satisfying biological needs for food, clothing, and shelter. Social patterns were based on kinship, age, and sex, but they varied greatly as they became adapted to local conditions. Warfare was restricted to blood feuds, revenge for witchcraft, and also occasionally retaliation against trespass.

(2) **Incipient Agriculture Era** — It must have been very long and began when the first cultivation of plant domesticates supplemented hunting and gathering, and ended when plant and animal breeding was able to support permanent communities. Technologies made little advance over those of the previous era until settled village life was fully achieved.

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35 — *Morgan's Statuses* [*Ancient Society*, 1877]:—

		Conditions
1. Savagery	1. Lower –	from the infancy of the mankind to the subsistence on fishing and a knowledge of the use of fire.
	2. Middle –	subsitence on fishing to the invention of the bow and arrow.
	3. Upper –	transitional.

(cont.)

(3) **Formative Era of Basic Technologies and Folk Culture** — The principal technologies -basketry, pottery, weaving, metallurgy, and construction- appeared; population growth; area expansion of cultures and peoples; comparative peace; and wide diffusion of culture between centers of civilization. The principal domesticated plants were brought under intensive cultivation, and irrigation was begun on a community scale. In the Old World, the more important domesticated animals, except the horse, were present from early in the Era. In the New World, the absence of suitable wild species for domestication limited such animals to the dog, and in the Andes, to the llama and alpaca. Food production was on subsistence basis, except as a share was provided for the priest and ruling classes. Increasingly efficient farming released considerable labour for the satisfaction of socially derived needs; i.e., craft production of finer goods and construction of religious edifices for the theocracy made rapid progress. The sociopolitical unit seems to have been the small local communities. The clustering of rooms in house units suggests that lineages or kin-groups were the basis of society. One to several such units were associated with a ceremonial center, which served as the nucleus and integrating factor of a dispersed community. Control of irrigation, which was on a local basis, was one of the more important practical functions of the religious leaders. Warfare was probably limited to raids and contributed little either to social structure or expansion of state.

(4) **Era of Regiona Development and Florescence** — marked by the emergence of regionally distinctive cultures. No new basic technologies were invented, but irrigation works were enlarged, thus releasing a larger portion of the population to develop arts and crafts and to further intellectual interests. Multi - community states arose. States were still strongly theocratic, but inter-state competition and state expansion entailed some militarism. A class-structured society, which was foreshadowed in the previous era, now became fully established. The ruling class appears to have been predominantly theocratic, but it was likely that some status was accorded to successful warriors. The priesthood now had sufficient leisure to develop astronomy, mathematics, and writing. The largest religious edifices were built, and the finest art and manufactured products of any era were produced toward the end of this era, each region producing distinctive styles. These products were made by special artisans and were dedicated

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II. Barbarism	4. Lower –	the invention of pottery.
	5. Middle –	domestication of animals on the Eastern Hemisphere; the cultivation of maize and plants by irrigation in the Western Hemisphere.
	6. Upper –	invention of iron-smelting and the use of iron-tools.
III. Civilization	7. Civilization –	writing, metal, statecraft and urban institutions.

In modern times the archaeologists of G. V. Child's competence has seen fit to apply the Morgan's statuses to the pre-Neolithic (savages), the Neolithic (barbarians), and the post-Neolithic (civilized) periods of current usage. The scheme of Morgan has been criticised by M. J. Herskovits [*Man & His Works*, NY, 1960, pp. 464-76, also 217-1].

principally to the upper classes and to the temples. Trade attained important proportions, and improved transportational devices were introduced.

(5) **Era of Cyclical Conquests**— diagnostic features of this era are the emergence of large scale militarism, the extension of political and economic domination over large areas or empires, or strong tendency toward urbanization, and construction of fortifications. Animal-drawn plow appeared. In the social structure, priest-warriors constituted the ruling groups, usually under a divine monarch, whose importance is revealed in elaborate status burial. Social classes now tended to become frozen into hereditary classes, in contrast to society of the previous era, which probably permitted individuals some upward mobility through personal achievements. Gods of war became prominent in the pantheon of deities. There were no important technocological changes. Bronze appeared in Peru, Mesopotamia and Egypt, and was used for weapons and ornaments, but it contributed little to the production of food or other goods. Iron, though not an iron-age culture, appear in China. The principal change in manufactures was strong trend towards standardization and mass production, with a concomitant sacrifice of aesthetic freedom and variety. Large-scale trade within empires, and even beyond, brought the beginnings of special commercial class, but coinage and an efficient monetary system were not yet developed.

The formulation here offered excludes all areas except the arid and semi-arid centres of ancient civilizations. Early civilizations developed also in such tropical rain-forest areas as Southeast Asia and in the Americas the environment is extremely humid, presenting the difficulties of rain-forests and also requiring large drainage projects. And in both areas the civilizations appear to have been later than in part derived from those of the irrigation areas.

PROTO-HUMANITY, SUB-HUMANITY, HUMANITY OF OUR AGE, GREATER HUMANITY & SUPER-HUMANITY

232-I. Our above review of the developments which have taken place in the methodological approach to functional-historiography and an interpretative apparatus for it, from Tylor and Morgan to White and Steward during a century or so [215-33-I], projects indeed, a pageant of the past human process pre-eminently as the fourth dimension of anthropo-geography,[36] and that too, mainly in its those manifestations in which the constitutionally herbivorous mammal that man[37] is, has raised itself to the status of a

36 - The term 'anthropo-geography' (the Universities of London, Calcutta, etc.), from which the term 'anthropo-ecology' so often used in the present study, has been derived, stands in the sense of what is also known as 'human geography' and so does also the latter term in the meaning of 'human ecology'.

37 - "Our remotest ancesters in due course", observes William Howells, "adopted certain oddities of behaviour which may have had considerable influence on their development. They were, in particular, refinements in food, clothing, and shelter, and man became in time the first domesticated animal..One such change was in diet. Apes are vegetarians, and so man must have been". ['Fossil men', *Human Evolution*, ed, Korn, N., and Smith, H. R., NY, 1959, p. 211.]

'thinking animal'[38] gifted with reflective intelligence developed in a brain increased in capacity from a mean of 550 cc. of the anthropoid stage of ancestry to that of 1500 cc., in the course of a million years [Weidenreich, F., 'Evolution of Human Brain', *Human Evolution*, NY. 1959. pp. 216-24]. This has been achieved with the aid of technological accessories to his organs, man has devised by manipulating a number of organic (wood, leaves, bone, horn, skin, gut, etc.) and inorganic (stone, silica, the metals copper, gold, silver, tin, iron, alluminium, etc.) substances as offered by the environment, in order to compensate his structural deficiencies and disabilities in which respects his fellow-organisms are luckier relatively[39], in the course of his struggle for existence. Besides the interaction between the environment and the instinctive human urges for the vital 'material and mating requirements' {58-I. 2}, the pageant displays further, though to a limited extent, how such extra-subsistence urges as those for inventiveness, aesthetics, sports and festivities, animal or sub-human agressiveness, religiousness that includes the human tendency to tradionalism, domination over others that has given rise to warfare and imperialism which in the scheme of Steward's five major developmental stages mark the highest conceivable level of the human progress {116-I. 5. 'The Era of Cyclical Conquests'} in antiquity; feeling of uniqueness, and parasitic hedonism {54-I. 3}, have influenced the human behavioral pattern in the course of history under the weight of which the human individual has lost his fundamental right to having free access to natural resources for his subsistence and survival {59-I }, in the midst of the animal-world, nay perhaps in the entire phenomenon of life which appears to be a unique event in the development of the universe around us as the science of our age appears to demonstrate. The result is that we find at our end today the human process staggering in a morbid and disorderly state, apprehended long ago by our ancestors in Misr, Iraq, Israel, Greece, Iran, India and China.

233-I. The human beings of the Golden Age were like Adam and Eve living in the Garden of Aden, who knew no morals or physical evil and did not have to labour. During the succeeding Silver Age, the people who were like the 'Dwellers on Olympus' of the Greek mythology, were worse than their predecessors who lived in sorrow because of their

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38 – The human creature has variously been defined; for instance, as a 'talking', 'thinking', or a 'religious' animal. In 1778 Benjamin Franklin offered the definition that man is a tool-maker animal or *Homofaber* [Oakley, K., 'Tools Makyth Man', *Ideas on Human Evolution*, ed., Howells, W., Harvard Univ., 1962, p. 422] and it is this definition which social sciences like history, archaeology, anthropology, etc., have adopted for man. Man, according to the traditional Indian concept, is a 'thinking animal' as such terms as *manushya* or *mānava*, derived from the Sanskrit root 'man' (='to think') suggest us.

39 – Man is structurally far from being as perfected and adapted to his environment as are his cousins, the monkeys and the apes, to theirs. It is so because man has arisen just a million years ago in the history of the life on the earth, so brief and late, as a matter of fact, by geological standards, that there has been insufficient time for him to adapt his bodily structure to all the demands made upon it. Nature has, however, helped him the other way round. He has a highly developed brain, an efficient masticatory apparatus, isometric sight, ability to speak and to think objectively, bipedalism, erect posture which has freed his pre-limbs to develop into hands having rotating fore-arms, flexible wrists, opposable thumbs, and versatile fingers capable of prehensile grip.

foolishness, for they were unable to refrain from savage insolence towards one another, nor would they serve the immortals, nor sacrifice on the holy altars of the blessed ones. Zeus in anger destroyed them. During the Bronze Age, the third in the sequence, the people were terrible and strong delighting in the deeds of the war and violence. It was followed by the Heroic Age of the peoples like those of Homer's *Iliad and Odyssey*. The last of the cycle is the Age of Iron of the miserable man about whom Hesiod (8th cent. BC) says :-

" Neither by day does he have an end of toil and sorrow, nor by night, and gods shall give him toilsome anxiety...nor will father agree with child, nor child with father, nor will brother be dear to brother as before.....And one man will sack another's city. Nor will there be any favour for the man who keeps his words, nor for the just and good, but rather men will praise the evil-doer and his crime.....And then shame and indignation will go from the wide-pathed earth to Olympus and bitter sorrows will be left for mortal men, and there will be no help against evil " [Hesiod's *Works and Days*, pp. 30-31].

234-I. The Indian scheme of Ages of the World consists of four ' yugas ', the Krita or Satya, the Tretā, the Dvāpara, and the Kali. The Krita is the age in which righteousness is eternal, when duties did not languish nor people decline. No efforts were made by men, the fruit of the earth was obtained by their mere wish. There was no malice, weeping, pride, or deceit. The castes alike in their functions fulfilled their duties, were unceasingly devoted to one deity. In the Treta-yuga sacrifice commenced, righteousness decreased by one-fourth; men adhered to truth, and were devoted to ceremonies. Men acted with an object in view, and were no longer disposed to austerities and liberality from a simple feeling of duty. They had one Veda only. In the Dvāpara righteousness was diminished by a half. The Veda became fourfold. Ceremonies were celebrated in a great variety of ways. From the decline of goodness only few men adhered to truth. When men had fallen away from goodness, many diseases, desires, and calamities, caused by destiny, assailed them. In the Kali-yuga righteousness remained to the extent of one-fourth only. Practices enjoined by the Vedas, works of righteousness, and rites of sacrifice ceased [*Vishṇu-purāṇa*, I, III]. " The observance of caste, order, and institutions will not prevail in the Kali Age.. Marriages in this age will not be conformable to the ritual. The laws that regulate the coduct of husband and wife will be disregarded. The women will be fickle, gluttonous and have many children. Pride of beauty will be prompted by no other personal charm than fine hair. Gold, jewels, diamonds, clothes will all have perished, and then hair will be the only ornament with which women can decorate themselves. Accumulated treasures will be expended on ostentatious dwellings. The minds of men will be wholly occupied in acquiring wealth. Women will follow their inclinations, and be ever fond of pleasure. Men will fix their desires upon riches, even though dishonestly acquired. Men of all degrees will conceit themselves to be equal with Brāhmaṇas { Hindu priest caste, 86-I. }. Cow will be held in esteem only as they supply milk. The people will be almost always in dread of dearth, and apprehensive of scarcity. Then will the clouds yield scanty rain... the prevailing caste will be the S'udra (the fourth *varṇas* of the Indian social hierarchy, whose duty is to serve the other three *varṇās*, the Brāhmaṇa, the Kshatriya or the warrior and regal caste, and the Vaiśya or the agricultural and trading caste). Princes, instead of protecting, will plunder their subjects under the pretext of levying customs. Vaiśyas will abandon agriculture and commerce. Oppressed by famine and taxation, men will desert their native lands, and go to those countries which are fit for coarser grains.

The path of the Vedas being obliterated, and men having deviated into heresy, inequality will flourish, and the duration of life will therefore decrease. Endowed with little sense, men, subject to all the infirmities of mind, speech, and body, will daily comit sins; and every thing that is calculated to afflict beings, vicious, impure, and wretched, will be generated in the Kali Age. In truth there will never be abundance in the Kali Age, and men will never enjoy pleasure and happiness." [*Vishṇu-purāṇa*, VI, i, assumed its extant form during c. 4th cent AD].

235-I In the midst of the chaotic state to which the mechanism of the human process has been degrading—because of the vaccum which such sub-human instinctive urges as animal aggressiveness, parasitic hedonism, and domination over others have found for their channelization-faint occasional lights from what lies in the inner man to impel his counterpart in flesh and mind to assume a path for his future progress in terms of human symbiotic relationship[40] with his own species and fellow-beings, have reflected through history. This factor of psychodynamics is suggested by the appearances of such personalities as Akhnaten {c. 1380–63 BC, 112-I}, Kṛishṇa {c. 13–12th cent BC, 22-I 51-I}, Pārśva (c. 877-777 BC), Buddha (c. 563–483 BC), Aśoka {c. 269–2352 BC, 112-I}, Quetzalcoatl (pre-Columbian America), the Ālvār and Nāyanār saints (5–11th cents AD), Vāsava (12th cent), Kumārpal (1143-74), Kabir (1440–1518), S'ankaradeva (1449-1568), Chaitanya (1458–1532), Akbar (1555–1605), and many others in the world, who preached the gospel of human symbiotic mutualism or non-violence, which the Indian philosophy recognizes as the doctrine of 'ahiṃsā'[41] (a=non-, hiṃsā=violence). The Islamic conception of 'rahm' and

40 - Instinct of mutual interdependence or co-operation for assistence in the struggle for life is called in biology 'symbiosis' from a Greek word which means 'living together'. Symbiosis is a relationship which benefits both participants, called 'consortes', for they exhibit 'consortism' (living organisms not only live in an environment, but also are themselves a part of that dynamic environment for other organisms) for coming into a symbiotic relationship with another organism. 'Symbiotic mutualism' (co-operative partnership to the benifit of both the parties), 'commensalism' (it is voluntary and benifits one party only), 'parasitism' (one party forcibly exploits the resources of other party), and 'predation' (nonsymbiotic consortism with death-dealing damage to one for the benefit of the other, for instance, carnivourism, grazing, etc.) are the divisions of consortism [Woodbury, A. M., *Principles of General Ecology*, NY, 1954, pp. 384–97]. The application of the biological term 'symbiosis' has very recently entered the field of anthropology, for instance, J. J. Honigmann's terms like [*The World of Man*, NY, 1959, p. 248 –270] 'symbiotic communities', 'cultural-symbiosis' etc. We are employing for the present study the term 'human symbiosis' in the sense of the 'symbiotic mutualism' (the biological term for the state of 'live and let live') of man with his own kind and with the rest of the living forms in which state man's struggle for existence and his non-subsistence activities do not prejudice the very same fundamental interest of other beings.

41 - *Chhāndogya-upan*, III, 17 : *Mhb*, Anuśāsana-p, 'Compassion' CXIII; 'Animal Diet to be Forbidden' CXIV, 'Benifits of Ahiṃsā', CXVI; Bhishma-p., 'Bhagvad-Gitā', XIII-XXXXII : *Āchārāṅga-sutra*, I, 4, 2 : *Majjhima-nikāya*, III, 251; *Sutta-nipāta*, I, 343; *Vinaya-piṭaka*, I, 83, etc.

the Christian one of 'merces' represent, indeed, a level higher than that of ahimsa, because in this case no return is expected.

236-I. If man claims a right to live through uninterrupted by an unnatural calamity, his fellow-beings, too, possess legitimately the same fundamental right to complete the natural course of their life. That a normal being has an instinct to establish a symbiosis with other living forms becomes evident from the instance, how the essentially carnivorous animal the dog has developed this state of co-existence with man [we know that the dog is the mankind's first domesticated animal, 9-I]. The Semitic conception of God's Mercy to Man [*The Bible* N. T., St Mathew, 18, 23-35 ; St Luke, 6, 36, etc. *The Holy Quran*, XVII, 84; XXXIX, 54, etc.] appears to mark the dawn of the expression of the inner human urge for establishing symbiotic mutualism with his fellow-beings. In the next stage of his development man comes to realize that he is required to show mercy in his turn to his own kind. This stage seems to have been achieved in Misr during the Pyramid Age (c. 2778-2300 BC), when the Indus Civilization was yet in its infancy in the Indo-Sarasvati Basin. "I gave bread to all the hungry of his domain", expresses an Egyptian noble of the 27 cent BC, "I satisfied the wolves of the mountain and fowl of the sky with food. I never oppressed one in possession of his property" [Breasted, J. H., *Development of Religion and Thought in Ancient Egypt*, NY, 1949, p. 168]. "Never did I do anything evil towards any person", says the chief physician of king Sahura (c. 2558-44 BC, Fifth Dynasty of the Old Kingdom), while a priest a little later, states essentially the same thing, "Never have I done an act of violence towards any person" [*Ibid*, p. 168].

237-I. In the third stage the instinct of human symbiosis as mercy, is extended by man to sub-human creatures. This stage appears in India during the second millenium BC. A tradition is preserved in the Māhābharata, according to which, the early Indian rulers Ikshvāku (first Solar dynast of Ayodhya), Alla, Nimi, Haryaśva, Bharata, Dhundhu, Sagara, Subāhu, Rāma, Rantideva, etc., abstained from eating the animal-diet during the bright half of each month in the S'arda or early winter season; whereas Yayāti, Nahusha, Yuvanāśva, Muchukunda, Māndhāta, Hariśchandra, Dilipa, Raghu, etc. practised it during the bright half of every month [*Mhb*, Anuśāsana-parva, 'Abstinence from the Meat Diet, CXV]. They all are said to have ruled in the Gangetic Valley [Vishṇu-p., IV and V]. This might reflect initial conditions of the development of the doctrine of 'ahiṃsā' among the rice-growing Eastern Farming communities living in the Middle Gangetic Basin and the Doab. A Puranic legend in this connection is interesting. Pururavas, the first king of the Lunar Dynasty of Pratishṭhāna (Old Jhusi, Allahabad, at the confluence of the Gangā and the Yamunā or the Sangam) who flourished 95 reigns before the heroes of the Mahābharata [Pargiter, F. E. *AIHT*, pp. 144-6] of c. 13-12th cent BC, could neither get a wife nor sacrificial fire from the rulers and priests of the neighbouring Ayodhya, the capital of the Solar Dynasty, and other places, as he was of an unconventional birth or origin, i. e., he was an alien. So, he married a rescued lady of the Gandharva tribe of the Himalayas, named Urvaśi as his wife. Two sons of Pururavas, Āyu and Amāvasu, became kings of Pratishṭhāna and Kānyakubja (mod. Kannauj). Ayu's son was Nahusha, who is mentioned in the *Rigveda*, IX, 101, 4-6, and his brother was Raji. In the course of the 12th or the last war between the Devas ('Daeva' of the *Avesta*, Gathā III, Ha III, 4-5, etc., the Zoroastrian scripture of c. 1000-700 BC, who were the Vedic Aryans of India) and the Asuras [= Assyrians, 107-113-I], Brahma (creator-god) declared that the victory should be gained by that side which Raji joined. Raji demanded the kingship,

(Indrahood) on being approached by both the parties. Devas agreed and won the war with Raji's help. The promise was fulfilled. On Raji's death Indra refused to acknowledge the succession of his sons and, in order to secure their ruin, he led them astray in religion with the help of the sage Brihaspati. "Misled by their mental fascination, the sons of Raji became enemies of the Brāhmaṇas {priests of the Vedic cult, 117-8-I} and contemptners of the precepts of the Vedas, and embraced Jainism" [*Matsya-p.*, XXIV, 47]. He is referred to as the author of the *Brihaspati Sutra* [Winternitz M., *AHIL*, Cal., 1927, p. 519, etc.].

238-I. Tradition describes the Brihaspati's work as the first treatise on the Indian schools regarded as heretic (Nāstik, 'non-beleiver'; vitanḍa, 'casuistry') by the Vedic Brahmanas [Shastri, D., *A Short History of Indian Materialism & Hedonism*, Cal., 1957, pp. 8-13]. The Bārhaspatyas and the later Chārvakas[42] belonged, according to their own records, to what was known as the Lokayata or the Popular School [Chattopadhyaya, D., Lokāyata, ND. 1959, pp. 52-3]. According to the *Mahābhārata*, S'ānti-p., I, 120, when the Pāndāva brothers were triumphantly entering the capital Hastināpur after the great national war, thousands of the Vedic Brahmanas gathered at the city-gate to bestow blessings on Yudhishṭhira. Among them was Chārvāka. He moved foreward and addressed the king thus: "This assembly of the Brāhmanas is cursing you, for you have killed your kins. What have you gained by destroying your own people and murdering your own elders?" There was, indeed, much more in Lokayata system of thought than what we deduce from its criticism as a heresy[43] found in the works of the Vedic protagonists who were mustering an increasing state patronage as they were penetrating more and more into the Gangetic basin {148-I}. It appears that this materialistic system stood on a humanitarianistic foundation; and no wonder, if Arjuna was a Lokāyata free-thinker, for we find what Chārvāka remarked, exactly being argued by this warrior at the moment when he finds himself in the situation to fight against his kinsfolk at Kurukshetra battlefield on the Sarasvati, and his noble soul was troubled by an apparent conflict of duties. Krishṇa Vāsudeva or Devakiputra, mentioned in the Vedic literature first in the *Chhāndogya Upanishad*, III, 17-6, (c. 800 BC.), gives an answer and thereby the mankind in India gets the *Bhagvad-Gītā*[44] which according to Humboldt, is the most beautiful, perhaps the only true philosophical song existing in any known

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42- "The pleasure which arises to men from contact with sensible objects, is to be relinquished as accompanied by pain, such is the reasoning of fools. The *Agnihotra* (Vedic sacrifice), & c., are only useful as means of livelihood, for the Veda is tainted by the three faults of untruth, self- contradiction, and tautology, then again the imposters who call themselves the Vaidic pundits are mutually destructive, as the authority of the jñāna-kānḍa (section on knowledge) is overthrown by those who maintain that of three karma-kānḍa (section on action), and *vice versa*; and lastly, the three Vedas themselves are only the incoherent rhapsodies of knaves, and to this effect runs the saying, 'The *agnihotra*, the three Vedas, the ascetic's three staves, and smearing oneself with ashes, are, as Brihaspati says, but means of livelihood for those who have no manliness nor sense" [Radhakrishnan, S, & Moore A. C., *A Source Book in Indian Philosophy*, Princeton, 1957, pp. 229-30].

43 - *Sarva-darśana-samgraha*, I.

44 - The *Bhagvad Gita* is the first Sanskrit work to have been translated into an European language. In 1785 Charles Wilkinson published its first English translation [Winternitz, M., *HIL*, p. 10-1]. In 1808 the Gita first appeared in German.

tongue [Riencourt, A. de. *The Soul of India*, NY, 1960, p. 50]. The answer of Krishna to Arjuna as embodied in the *Gita*, which forms a part of the *Mahābhārata*, Bhithma-p., XIII-XXXXII, is at first to put simply the point of view of the warrior caste, that it is Arjuna's duty to fight, and that it is shameful not to do so. Later, he sets forth the view of the eternity of soul involved in the doctrine of reincarnation. There is no real killing or being killed. The *G ta* derives its main inspiration from the Upanishads that represent a stage of the first compromise between the Āryo-Middle Eastern Vedic and the Pre-Vedic systems of thought (Belief in the doctrine of Karma or the law of the deed, and the transmigration of souls, and a regard for non-violence and asceticism), and integrates into a comprehensive synthesis the different elements of the Vedic cult of sacrifice, the Upanishadic teaching of the Absolute *Brahman*, the Bhagavata theism, the Sānkhya dualism, and the Yoga meditation. He introduced in the northern India the typically Dravidian institution of *bhakti* or devotion, and the *pūjā* or worship with offerings of flowers and other vegetable articles [Chatterji, S. K., ' Contribution from Different Language-Culture Groups ', *CHI*, I, 1958, p. 82]. So the Bhagavad-Gita has to sift things to the very bottom. It is occupied not only with the general problem of the justification of the action, even if based on ahimsa, but also with justifying a non-ethical retreat at the time of the crisis of survival. Krishna thus set essentially a limit to the practice of ahimsa within practicable proportions and thereby India was saved by the Gita from the onslaughts of the Inner Asian pastoral tribes, to whom the menacing environmental conditions of an advanced stage of the Afrasian Desiccation began to drive into this subcontinent. " What unquestionably gives the *Gita* its power ", observes J. N. Farquhar, " is the representation of the Supreme as incarnate and as teaching the loftiest philosophy of India to his friend Arjuna, so that he and other simple laymen find release. The portrait of the incarnate one is drawn with great skill; the situation in which the teaching is given enforces certain of the lessons taught with great vividness; and the literary qualities of the book are well worthy of the teaching it contains. The *Bhagvad-Gita* is a very great work " [*Outlines of the Religious Literature of India*, Ox, 1920, pp. 90-1].

239-1. Man's attitude of prayer to the Deity for mercy reflects a feeling of helplessness on his part, essentially in respects of subsistence and survival issues both direct and indirect during crises. When man turned partial carnivorous in order to win his survival from the menacing glacial conditions during the Lower Pleistocene when many a mighty species like those of the mammotht and the mastodons succumbed, he reduced innocently his fellow-beings to the same pitiable and wretched lot from which he himself craved deliverence by appealing God for mercy. Man has been playing an indiscriminate havoc with both the forms of life, the flora and the fauna. If these life-forms had a God to whom to pray for deliverence from the human predatory symbiosis and other excesses, that God, indeed, appears to have failed. The time has come when man must become their God in this sense. The fact that the human system has not been able to develop biologically his organs further in order to fulfil the demands of a carnivorous life, even in the course of a million years, indicates that sooner or later man has to return to herbivorous life. Modern food technology can produce more palatable dishes without animal-food, but, man as a biological product, has no right or any excuse, to interfere with the natural course of the lives of his fellow-beings, on the same plea on which he claims the same concessions for himself. Symbiotic mutualism is the natural order in the animal world and the organisms which violate it are doomed to destruction ultimately as a natural corollary. The vital human affairs have so inextricably entanged with one another

that it appears difficult for the humanity now to survive long in view of the impending grave consequences, as Julian Huxley and other learned men have sounded a note of warning.[45] The solution seems to lie in organising anew the socio-economic aspect of the human institution on the foundation of economic independence to the individual to the extent he may be able to feed his pressing inner development on individual level. This must be the HUMAN MINIMUM in economic requirements, and the individual must have proprietary control, according to his share on equal terms, over natural resources without obligation to the society. The individual in the new set up must have a free choice either to join or not to join the society for earning extra-subsistence gains and other advantages through his taxable labour-share and dividend in co-operative industries and other means of earning prosperity. The automated industries may be owned and run by the society to meet the expenditure of development and administration of the community organization and the surplus be distributed individual-wise to its members.

240–I. After thus working out a new basis or foundation for erecting the edifice of a new humanity, the next issue might arise as to how to organize the willing individuals into the new society. Obviously, on the basis of the symbiotic mutualism among members of the society. Here we find ourselves involved in wider issues. Being essentially a herbivorous being man can hardly afford to offer concessions to the vegetation kingdom in this respect. Man must also be in relationship of symbiotic mutualism with his fellow-animals, if he does not want any more to eat them for food as a symbiotic predator. We have noticed how there lies a pressing instinct in the inner man that seeks its expression through establishing symbiotic mutualism with other animals. As this relationship between man and animals remains still generally to be achieved by the present humanity in which man has symbiotic relationship mainly with the individuals of his own species, we may reasonably recognize the former stage of human symbiotic mutualism with all living forms as that representing the Greater Humanity.

A NEW YARDSTICK FOR MEASURING AND EVALUATING THE HUMAN PROCESS

241–I. We thus postulate that the '**human minimum of requirements based on the economic independence of the individual to the extent of his being able to feed his inner development in a community which is in symbiotic mutualism with the entire living world with the aid of science and technology**'. With this standard (Greater Humanity) of measure (the Human Minimum, as we may call it), we may devise a dependable yardstick for evaluating various stages of the human process. We may recognize the following

45 – When people are hungry, sick, or crowded, as observe Burch and Pendell, they are exceedingly uncomfortable, they are not so prone to continue on even keel. It is difficult for them to weigh things dispassionately. Unrest is the fuel which the war spirit may fan into flame, and the foundation upon which authoritarian governments may be formed, either by the right or the left extremes. Under such condition, it would be very difficult to hold altruistic or co-operative ideals in the face of desperate needs for the necessities of life. The temptation to follow the rule of *might is right* is often overpowering [Burch, G. I. and Pendell, E., *Population Roads to Peace or War*, Washington, Pop. Ref. Bureau, 1945]

five developmental stages of Humanity on the above basis (details given are in successive order of human symbiosis, economy, technology, major inventions, and expression of extra-subsistence instinctive urges) :—

242-I. :—

STAGE-I. **PROTOHUMANITY.**

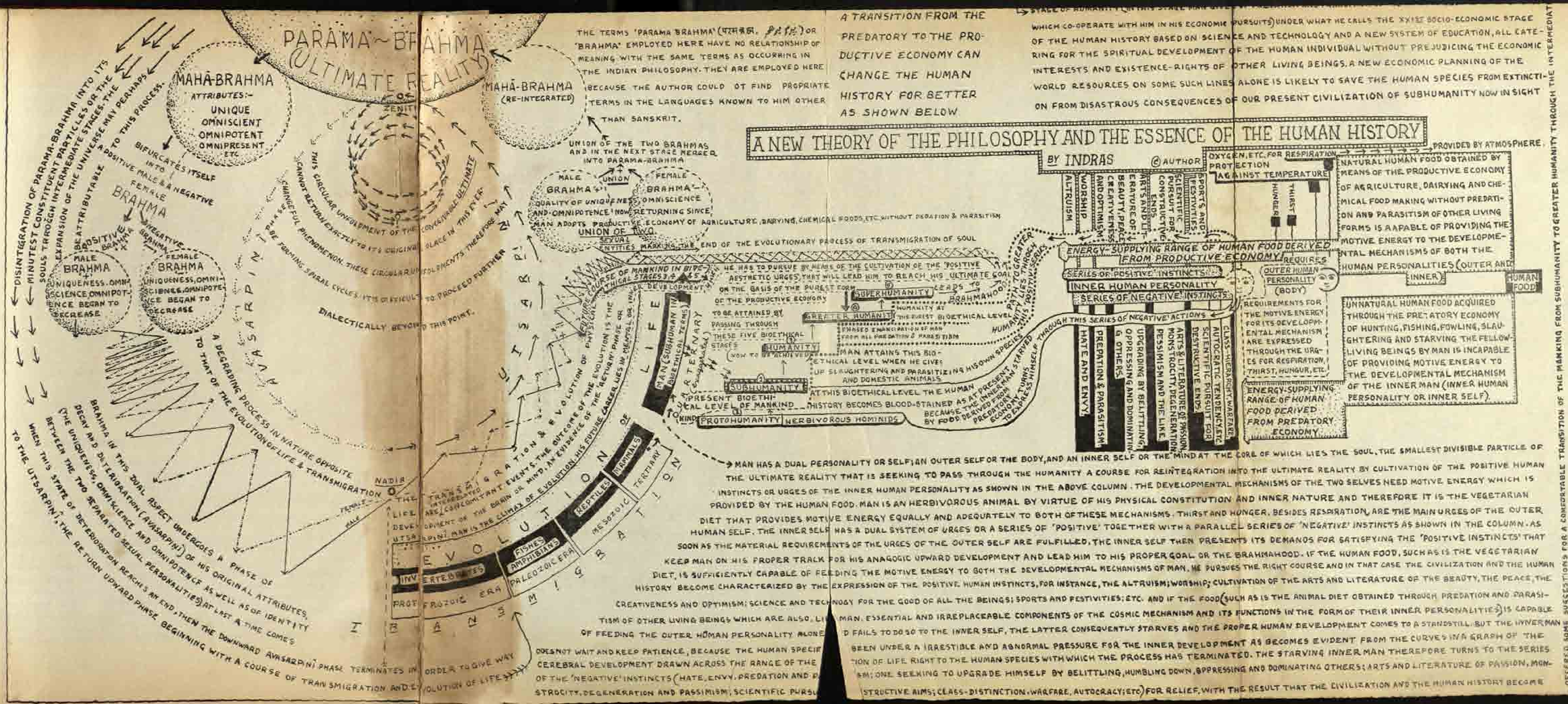
Man, a herbivorous hominoid of the Siwalik and contemporary horizons in the Tropical Belt of the Old World, stretching from Indonesia to Central Africa via the sub-Himalayas. Animal-aggressiveness and urge for sport present.

STAGE-II. **SUBHUMANITY.**

Man had to turn partial carnivorous to the extent of cannibalism for survival during the Lower Pleistocene, as becomes evident from the remains of Australopithecus found in Africa. However, his counterpart in Indonesia, the Paronthropus, adhered to vegetarianism [Robinson, J. R., 'The Australopithecines & their bearing on the Origin of Man & Stone Tool-Making,' *South African J. of Science*, LVII, 1961, pp. 1–13]. Hunting-collecting with the aid of Palaeolithic technology (wood, stone and fire). Animal-aggressiveness continued for defence as well as offence: beginnings of aesthetics and festivities.

STAGE-III. **HUMANITY.**

Man generally in symbiotic mutualism with his own kind, so cannibalism was reduced to a ritual. Man in predatory symbiosis with other animals for food and equipment. Blade industries ending with the termination of the Chacolithic in India and of Bronze Age in the Middle East at the beginning of the Iron Age, c. 1200 BC. The revolutionary invention was that of food-production through domestication of plants and animals (domestication of dog, dibble-culture, hoe-culture, agriculture including animal husbandry; the latter system is still prevalent and will persist for some time to come as no alternative to agriculture for food-production has yet been invented). Other inventions: pottery, plough, wheel, irrigation, writing, mathematics, astronomy, metallurgy, gun-powder, optical instruments, printing, etc., before the Industrial Revolution-I (1770) with which the Machine Age begins, giving rise to phenomenal material progress all over the world (steam and internal-combustion engines for industrial power to run machines), together with the consequent intensification of capital with the aid of imperialism, warfare, deplomacy, power-politics, etc. and the resulting general degeneration of man and civilization, as anticipted by some ancient peoples as the worst era of the human history [233-4-I] in which we are living today. All earlier instinctive urges persisted in the human behaviour and overpowered the expression of such benevolent and constructive urges as the feeling of uniqueness in the human individual that encourages his inner development, and the urge of altruism which seeks its channelization through the human symbiotic mutualism with the rest of the living world. The Industrial Revolution-II sets in from 1945 (development of nuclear energy, astronautics, cybernetics, etc.). Man during this stage leads an omnivorous living as both a herbivorous and carnivorous predator. Man's entry into the Greater Humanity may be considered as taking place when he ceases to subsist and survive as a predator of flora and fauna of his environment, which are, indeed,



LOST SARASVATI (facing p. 148)

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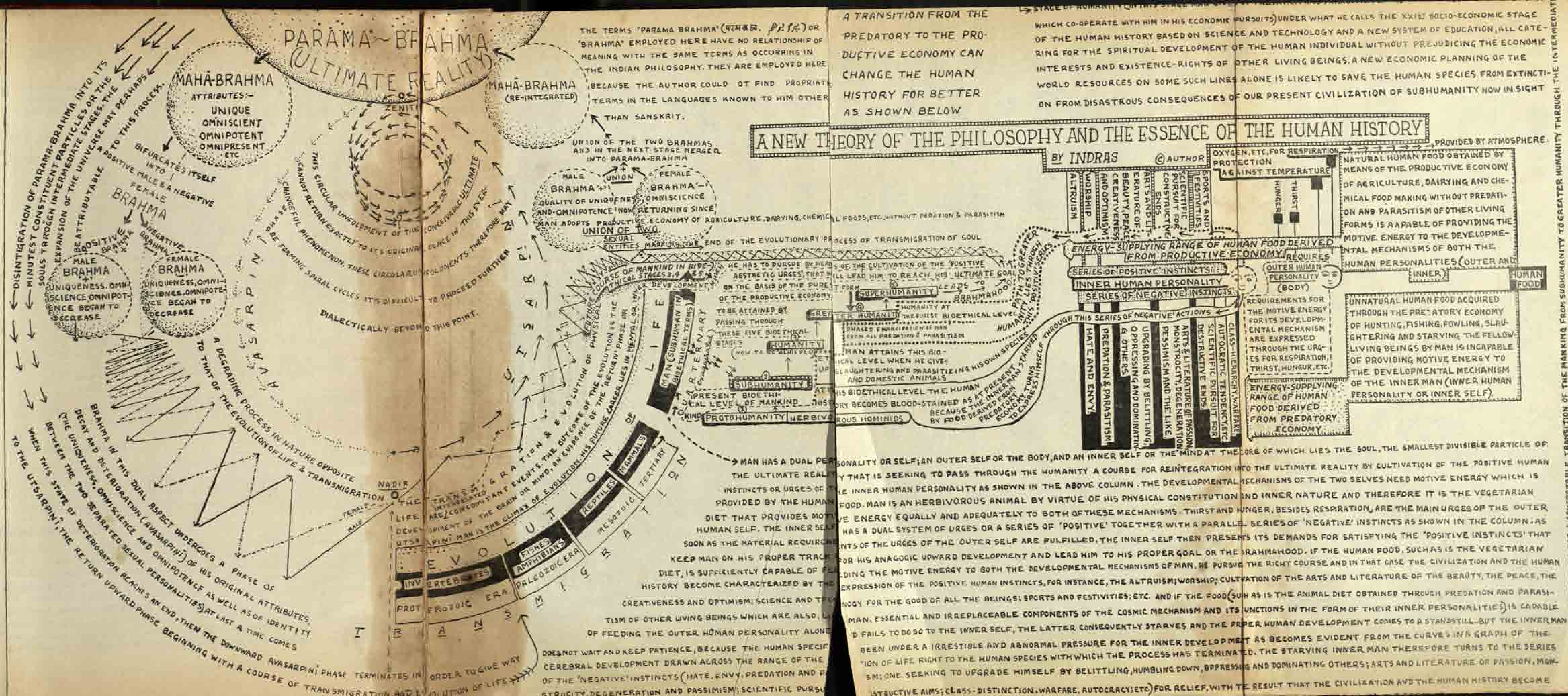
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LOST SARASVATI (facing p. 148)

otherwise far more useful to him; and when he begins to establish with them the relationship of symbiotic mutualism with the aid of science and technology of the Industrial Revolutions.

STAGE-IV. **GREATER HUMANITY.**

Man becomes greater in the terms of biological ethics by extending his symbiotic mutualism and altruism to his fellow-beings with the aid of science and technology of the Industrial Revolution II. The consequent rise of a new socio-economic order on the basis of the 'human minimum' {241-I} releasing forces under which such sub-human instinctive urges as animal—agressiveness, domination, parasitic hedonism, etc., are likely to subside and such constructive urges as the inventiveness, aesthetics, sports and festivities, feeling of uniqueness, altruism, and the quest for the unknown appear likely to assume a path of unhindered development both on the individual and social planes. A universal stage may develop for the common development of the mankind and his fellow-beings. The stage is likely to mark what is visualized as the Return-to-Paradise in the Zoroastrian, Hebrew, Christian and Islamic thoughts, the Golden Age of the Greeks, the Krita or Satya-yuga of the Hindus, the conceptions of the Age of Gods and the land of Dilmun of the Egyptians and the Sumerians, respectively. It may be anticipated to have three phases :—

(1) Greater Humanity-1. Man's symbiotic mutualism with herbivorous animals with the aid of science and technology.

(2) Greater Humanity-2. Man's symbiotic mutualism with the whole animal world.

(3) Greater Humanity-3. Man's symbiotic mutualism with the entire phenomenon of life.

STAGE-V. **SUPERHUMANITY.**

The achievement of the Greater Humanity-3 may lead to this stage which may be visualized to represent the 'Brahmaloka' conception of Radhakrishnan, the Gnostic of Aurobindo, the Supraconscious level of Sorokin, the Ultra-hominization of Chardin, and other formulations. Its beginning may mark the humanity's coming of age.

From page 150 (243-I, chart) :—

‡ An instinct often stimulating man to feel that he is the Saviour, the Messiah, an Incarna-
tion, etc. has occasionally expressed itself through history (Vena, Hiranyakaśipu, Kṛishṇa,
Meshiach Yahweh or Saul, Bodhisattva, the Hindu Incarnation pedegree including Kalki,
Theudas, Moses of Crete, Mahdi, Abu Isa al Ispahani, Yudghen of Hamadan, Eldad Ha-
Dani, Menahem, David Aroy, Abraham Abulafia, David Reubeni, Prāṇnath, Krishnamurti,
and many others) and in which the human 'feeling of uniqueness' reaches its climax,
reflects the existence of a very deep-seated and a much suppressed dormant urge in man
which seeks a merger, identification, or unity with the Ultimate Reality, that may find its
development in the Greater Humanity and a fulfilment in the Superhumanity stages.

243-I :—

FIVE STAGES OF THE DEVELOPMENT OF HUMANITY

I PROTO-HUMANITY नरपशुः	II SUBHUMANITY नराधम	III HUMANITY नरः	IV GREATER HUMANITY नरोत्तमः (The Return-to-Paradise, the Golden Age, the Satya-Yuga, etc.) 1 2 3*	V SUPERHUMANITY नारायणः
Herbivorous living	Deterioration to cannibalism	Man in symbiotic mutualism with fellows of his own species, but an omnivorous predator at the same time. He may be deemed qualified for passing into the Greater Humanity when he ceases to continue as a predator of both flora and fauna of his environment, and when he begins to establish with them a relationship of symbiotic mutualism.	Man in symbiotic mutualism with all the life-forms: Return to herbivorous living. Economic freedom to the individual. Membership of society voluntary.	'Brahmaloka' concept of Radhakrishnan, Gnostic of Aurobindo, Supra-conscious level of Sorokin, Utra-Hominization of Chardin. ‡

Steward's Human Developmental Stages functioning on the lines of White's Energy Theory			
Hunting Life 1	Farming-Fishing Life and the Rise of Villages 2-3	Urban Development 4-5	The Industrial Revolutions. The Unity of Man and Religions

10,000 BP— 3000 BC— 1750 AD—

E C O N O M I C   F O U N D A T I O N   O F   C O M M U N I T Y

HUNTING-COLLECTING (NOMADIC LIFE)	ERA OF FOOD-PRODUCTION THROUGH AGRICULTURE (SEDENTARY LIFE)

INDROS

* The Greater Humanity-Phase 3 marks the phase of the Ideal Man who will be in perfect symbiotic mutualism with all the life-forms. This condition may serve as the threshold of the Era of Superhumanity.

‡ On the last page.

DISTINCTIVE FEATURES OF THE TWO OLD WORLD BASIC CULTURE-COMPLEXES

244–I. Having devised a gauge for evaluating various situations, aspects, states, etc., of the human process in terms of mainly the human symbiosis with other components of the mechanism of the phenomenon of life, taking the Greater Humanity-III (man in symbiotic mutualism with all the life-forms with the aid of science and technology) as a model for the ideal or the perfect man, we may now resume our cursory survey {194-212–I} of certain aspects of the human process in the New World of the Americas. But still do we require to pause a while in order to acquaint ourselves with some of the distinctive features peculiar to the two basic culture-complexes related to the two Old World basic farming communities, i.e., an Eastern of the humid tropical Southeast Asia, and a Western of the Afrasian Dry Zone.

Two main basic traits may primarily be recognized in these complexes: (1) whereas the palaeolithic axe in the form of a cleaver or chopper of the food-gathering stage continued as the polished stone axe {182–92–I} well into the food-producing stage in the Eastern community, it disappeared in the later stage in the Western community and was supplanted by the 'blade' stone industries {4–I}: and (2) the development of patriarchy in the Western community in the course of the pastoral stage {6–I} from a matriarchal basic social structure common to both the communities of the Old World. The Eastern community thus characteristically lacked the blade industries and patriarchy. The domesticated pig as a scavanger is essentially a Southeast Asian animal [Forde, C. D. *Habitat, Economy & Society*, Lon. 1956. pp. 444–6] related to a mode of food-getting in which the polished stone axe of the palaeolithic tradition plays a functional role.

245–I. It therefore follows from the above facts that the presence of a blade industry, pastoralism, and patriarchy in the Eastern culture-complex as well as in the Americas, attests an influence from the Western culture-complex. Conversely, the presence of the domesticated pig and the polished stone axe in the Western society, may well be assigned to influences from its eastern counterpart. The worship of nude mother-goddess and phallus, sacrifices, plant-worship, ancestor cult, matriarchy, etc., as a direct heritage of the earlier hunting-collecting (food-gathering) stage may well belong to the earlier horizon when the two societies shared a common culture and practised a common supplementary food-producing economy based on root-planting or dibble culture.

246–I. We have noticed some facts about the genesis of the food-producing economy {12–3–I}, the location of its cradle in the submontane parts of the Fertile Crescent {80–I}, lying adjacent to Vavilov's fourth primary center {the Near Eastern 19–I, 4} where the einkorn wheat was first cultivated {30–1–I}, the identification of a second cradle (rice) in Southeast Asia {20, 23, 43, 49–I}, and the recent general tendency of crediting this Eastern cradle with a priority in developing the most momentous economic innovation of the human history so far, i. e. the food-producing technology.

247–I. The plant domestication and crop growing according to this tendency {49–I} began in the humid tropical lands which abound in species of plants directly of use to early man. Saur's thesis suggest that fishing peoples began the first specific working with plants and plant products in net and trap making, and that they discovered many gums, poisons and

spices that are so frequent in the tropics. Tubers, roots, and rhizomes gathered both for food and for body paints and other dyes, came withen their working patterns and gradually came to be the first specific crop items in a simple form of farming that depended upon vegetative reprodution of live plant material. Seed or cereal farming, which we find as the earliest form of cultivation in the Fertile Crescent, and other cropping practices, are held to be in this theory, the later developments. It follows that the dibble or digging-stick subsistence crop-growing (roots, tubers, and rhizomes; yams, taro, sweet potato; banana, coconut, etc.) would constitute possibly the oldest agricultural systems [Sauer, C. O., *Agricultural Origins & Dispersals*, NY, 1952] that appears to lie at the foundation of our entire food-producing technology and it is from this root that various forms, like the hoe-culture or the ladang { 12-I, Fn. 5 }, practised generally by the cultivators of millets and rice { 41-43-I } in the Southeast Asia, the Far East, and maize { 164-201-I } in the Americas; the agriculture { Fn. 5 } based on the animal-driven plough, irrigation, wheeled-transport, etc., grew up in course of time, according to the facilities provided by various types of ecological settings.

248-I. It has been clarified earlier { 174-I } that the ethnic types have little meaning for the purpose of such a functional history as the present study aims to be. The linguistic grouping, too, has not much significance in this context, for ideas and techniques can freely pass from one people to another without reference to ethnological or linguistic grouping. However, the primary linguistic grouping offers valuable functional-historical data and we have therefore admitted it into the present study. The present population of the Indo-Pacific region (the term has mainly cultural significance and embraces a part of eastern India, Southeast Asia, and islands of the Pacific including Australia) can be resolved into a linguistic strata consisting of (1) the Andamanese, (2) the Australian, (3) the Papuan, (4) the Austric { 169-71-I }, (5) the Tibeto-Chinese, and (6) the Indo-European families of languages. The speakers of the first are confined to the Andaman Islands in the Bay of Bengal. It has numerals only for 1 and 2, the digits up to 9 being indicated by raising the requisite number of fingers. Beyond 10, no counting is possible [Portman, M. V., *Notes on the Languages of the South Andaman Group of Tribes*, Cal, 1898 etc.]. Attempts have been made to connect the Australian with the African Nilotic languages of the Sudan group, Andamanese, Dravidian, Papuan and the Austric, but the group is best regarded as wholly independent [Gray, L. H. *Foundations & Language*, NY, 1960, p. 399]. It has only three numerals, (1, 2 and 3), higher numbers up to 20 being expressed by additions. Attempts to connect the Papuan with Dravidian and Australian have not yet been successful [*Ibid.* p. 388]. The Austric family has been noticed { 161, 171-I }.

249-I. The Indo-European languages that are spoken in the eastern India are Assamese, Bengali, Oriya and Bihari (Tertiary Prakrits of the Outer Band of the Māgadhi Secondary Prakrit, developed from the Prāchya Primary Prakrit of the Indo-Aryan branch of the Indo-Iranian section of the S'atam group of the Indo-European linguistic family). These four east Indian languages show influence of the Austric speeches, which is discernible also in the Primary Prakrit stage including the Vedic to some extent { 169.I }, indicating the presence of the Austric speakers in the northern India prior to the Rigvedic period, c. 1,500 BC. We have already noted that the Austric had reached Modagascar by the sea, on one hand; and the heart of the Middle East during or before the dawn of the Subsistence Revolution in the Old World Western cradle.

250-I. Tibeto-Chinese Linguistic Family :—

- TIBETO – CHINESE LINGUISTIC FAMILY
  - Tibeto Burman
    - **Himālayan**
      - Sunwar (Bengal)
      - Newari (Bengal)
      - Gurung (Nepal)
      - Magari (Nepal)
      - Rong or Bhotia (Sikkim)
      - Kiranti (Nepal)
      - Dhimal (Nepal)
    - **North Assam**
      - Aka, Dafla
      - Abor
    - **Middle & South Assam**
      - Bodo (Bara, Laking, Garo, Tripura)
      - Nāgā-Bodo
      - Nāgā
      - Kachin
      - Nāgā-Kuki
    - Arakan-Burma
      - Kuki-Chin (**Meithei** or Manipuri, & Lushei)
      - Burmese
  - Thai-Chines
    - Thai
      - Northern Thai
        - Miao, Yao, Khāmti, Nora, Thairong, Shān, Atona, **Ahom**
      - South-Eastern
        - Siamese, Lao, Lū, Khūn
      - Eastern
        - Hainan & Mainland dialects
    - Annam-Muong
    - Karen dialects
    - Silono dialects
    - Chinese
      - Nothern
        - Mandarian & Peking
      - Southern
        - Canton, Amoy, Nanking, etc.
  - Yenissi dialects
    - Yenissi dialects
    - Kottish, etc.

251-I. Turning to archaeology, we may refer here to the 'Tentative Correlation of the Neolithic Industries of India and Indo-China' as worked out by V. D. Krishnaswamy [*AI.* 9, 1953, pp. 76-7]:—

(Order of sequence from bottom upwards)

	A-INDIA	B-INDO-CHINA
	(1) LATE NEOLITHIC (Celt types of E. C. Worman 9-12). Chakradharpur & Haribela sites in Singhbhum. Brahmagiri-IB.	LATE BACSONIAN-SOMERONG SEN. (Copper-bronze) Celt-types of E. C. Worman 2, 4, 6, 8-11. Plain & decorated hand-made pottery. Domestic dog.
	(2) MID-NEOLITHIC (Types 5-8) Burzahom in Kashmir (c. 1850±130 BC) Brahmagiri IA {=Utnur 2295 ± 155 BC & IB. Indus Civilization 83-I}. Sanganakallu-II Surface finds from Bellary, Raichur, Hyderabad, etc.	MID-BACSONIAN-LATE HOABINIAN Celt types 1-3, 6-7. Smoothing of Cutting edge. No animal husbandry.
	(3) EARLY NEOLITHIC (1-4). Brahmagiri 'pre-I' type. Sanganakallu-I	EARLY BACSONIAN-MID HOABINHIAN. Celt-types 1-2 appear first. Stone chipped: **smoothing appears, traces of agriculture.**
ARCHAIC (of the author's classification) — Late	(4) MESOLITHIC. Singrauli microliths & Langhnaj-I.	EARLY ('Archaic') HOABINHIAN Lithic industry based on rounded river-pebbles & roughly chipped, bone tools. (Mesolithic, supposed association with the Australo-Melanesians: Heekeren, H. R., 'A Preliminary Note on the Excavation of Sai-Yok Rockshelter', *J. Siam Soc.*, XLIX, 1961, p. 105-6)
ARCHAIC — Early	Kandivli Upper Clay. Jalahalli 'hunting type'. Upper Nandikanama. Tuticorin *teri* microliths {c. fifth millenium BC, 76-I}	
	(5) PROTO-NEOLITHIC OR MIDDLE STONE AGE (the author adds here) (i) Late—Vestiges of nucleated settltments in Peninsular India. (ii) Early—Upper Gravels of the Pravara {4-I}	

252–I. Homo sapiens appears in the Western Asia, Africa and Europe with the Blade industries, but his appearance in the Southeast Asia does not seem to have been associated, even casually, with a technological change. A hunting–gathering horizon that reminds us essentially of a late Upper Palaeolithic continuum is found in association with the speakers of the Australian, Papuan, and Andamanese languages in the Indo-Pacific region. The horizon in Africa is represented by the Pygmies of Congo and the Bushmen of the Kalahari Desert. In Sri Lanka by the Veddas. India has, besides the Andamanese, some more hunting tribes (the Kadar, the Mala-Pantaram, the Palian, the Conta-Reddi and the Koya of the southern India; the Juang of Orissa; the Hill Maria of M. P.; the Raji of U. P.; the Kharia and Birhor of Bihar; and the Kuki tribes, the Komjak Nagas, etc., of Assam; Majumdar, D. N., *Races & Cultures of India*, Bom. 1958, p. 141, 'Hunting and Collectional Stage' peoples), who practically pursue the same economy, but are essentially more advanced in certain respects, having been living in the surroundings of civilization for over four millenia. In the Americas there are many peoples belonging to this socio–economic horizon, which we may call the proto-archaic in terms of Willey and Phillips classification { 199–I,2 }.

253–I. " The tools of the Hoabinhian, stage B { 252–I, B 3 }, group III, " observes A. H. Dani, " correspond with those of the Bacsonian, stage C { 252–I, B 2 }, Dong–Thuoc (b) Group...Generally speaking, only the ground tools in the Hoabinhian culture appear to have been derived from the Bacsonian... There are some unground tools which also bear resemblance to the Bacsonian types... The comparison now finally brings out that stage A of the Hoabinhian { 252–I, B 2 } was more or less of the same catagory as stages B of Bacson... The only difficulty arises with the so-called ' Archaic ' tools in the two regions. The pebble choppers of the Hoabinhian culture have not so far been found in Bac–son [Dani, A. H., *Prehistory & Protohistory of Eastern India*, Cal. 1960, p. 146–7].

254–I. These two mainly typologically correlated archaeological horizons of the protohistoric Southeast Asia should not be also temporal contemporaries, for the technological development is conditioned more by ecological rather than other factors. We have already noticed { 251–I } that the polished stone axe which seems to mark the presence of food–producing by cultivation–specifically the horticulture (dibble and hoe-cultures) of the Southeast Asian and American Indian pattern that had neither the domestic farm animals nor the plough –just as the serrated sickle blades do in the case of the Western agriculture. The polished axe was indeed an implement of the palaeolithic heritage that was adapted to new functions firstly by grinding its edge only, and later by polishing it all over, like an Acheulian biface handaxe. This factor as well as its frequent association with domesticated pig, the animal native to the humid Orient [Forde, C. D., *Habitat, Economy & Society*, Lon. 1956, p.p. 444–6] found in archaeological records { 183–I, etc. }, and the absence of the earlier handaxe tradition in the American Archaic { 199–I, 2 }, etc., go to suggest for the polished stone axe a Southeast Asian centre of development. Its diffusion to America where it occurs in the earliest known archaeological context in the Green River Phase of the Southeastern (U. S. A.) Archaic, carbon–dated 5423 ± 500 BC (Annis site) and the Eva Phase on the lower Tennessee river [Arnold, J. R. & Libby, W. F., 'Radiocarbon Dates,' *Sc.* 113, No. 2927' 1951 : Crane, H. R., 'University of Michigan Radiocarbon Dates', *Sc.* 124, 1956], on one hand; and its occurrence in c. 6000 BC old strata of an agricultural stage at Belt Cave on the Caspian in association with domestic pig [Coon, C. S., *Cave Explorations in Iran*, Phil. 1951, p. 75] in Western Farming Region in the Natufian–Eynan–Jericho A, 6480 ± 150 BC – Belt Cave, 5840 ± 330 BC prepottery

Neolithic horizon [Mellaart, J., 'The Beginning of Village & Urban Life', *The Dawn of Civilization*, or *DC*, Lon, 1961, pp. 55-61] "A man with a polished-stone axe," writes C. S. Coon, "can fell trees large enough for house-building, canoe-making, or sled-making...it was possible to spread the idea of a polished-stone axe among hunters, who could see its immediate advantage in making weapons, boats, tent frames, and fences into which to drive the game, long before it was possible to pursuade them to give up hunting and to live by cultivation. The polished stone ax was a particular boon to those living in northern forests beyond the range of agriculture, where canoes, snowshoes, and sled are essential-"[*The History of Man*, Lon, 1962, p. 82-3]. "Our hypothesis starts with the assumption," observe Willey and Phillips," that the basic adaptation to the modern forest and waterside environments is represented by the various Archaic cultures and that their ultimate sources lie in the boreal cultures of the Eurasiatic Mesolithic and Neolithic stages. Upon this substratum, we further hypothesize, was grafted one or several pottery traditions, also of northern Eurasiatic origin, resulting in the Early Woodland cultures of the Griffins scheme" [*M & T AA*, p. 118]. Leaving out of consideration the diffusion of the polished stone axe to America where it serves as a guide antiquity of the Archaic stage which in its turn marks the incipient and early agricultural horizon, the implement may well have taken hardly less than a millenium to spread from the Southeast Asia to the Caspian, a distance of about 4000 mls, at the rate of the movement of a normal horticultural group in the wake of soil-exhaustion. The genesis of the food-producing economy based on the hoe-culture in the Southeast Asia stands thus chronologically on a par with that of the Old World Western farming cradle. However, we have still to wait for its confirmation and precise location of its cradle from the Southeast Asian archaeology. The region has poorly been surveyed protohistorically so far. The horticulture was practised in the Western farming cradle during the prepottery Neolithic (c. 7,000--5,500 BC), and in the earlier stage no definite traces of food--production have yet been encountered. In the Eastern cradle, however, we come across the protohorticultural development in the form of the digging--stick or dibble culture [245, 247--I.].

255-I The digging stick of the hunting-gathering peoples, whose point is normally hardened in the fire (the Bushmen, the Andamanese, the Semangs, the Australians, the Oceanians, the Hop of North America, the Boro of the Amazonia, etc.) and with which they dig roots and tubers and dislodge shell-fish, may also be used as a dibble stick to make holes for the seeds and to break clods in the incipient agriculture or root-cultivation. "It is a remarkable fact", states C. D. Forde, " that hoes with blades of wood or stone are among the rarest of ethnographical specimens, and that outside the Old World area of the iron hoe, the primary agricultural implement among the lower cultivators from Senegal to Indo-China the digging-stick alone is found" [*op. cit.* p. 432-3].

256-I. The transition from the palaeolithic to the polished stone axe or celt that looks both easier and direct typologically seems to have been a complicated process for it involves a change of stone from comparatively harder quartzite, flint, etc., to softer volcanic and other racks. Grinding seems to have been first involved in the lithic technology when in the course of the process of new craft of reducing gathered cereals and seeds yielded by the *gramineae* grasses—a development with which the hunting-collecting gave way to the domestication of roots and tubers through dibble-culture marking the beginning of the Archaic—into paste or powder with a slab and a pebble as mealing and grinding stones. The experience thus gathered with the grinding process and its action on stone may well have

shown a way to get a renewable and sharper cutting-edge than obtainable by percussion or pressure flaking on a traditional palaeolithic type of axe. It was an advantage over earlier types. Thus the transition from the Stage C or the Archaic Hoabinhian characterized by pebble choppers, through the Intermediate or Stage B Hoabinhian in which the edge-grinding occurs, to the Late or Stage C Horbinhian wherein the pebble choppers disappear and partially--ground axes appear, seems to have resulted from the gathering stage connected with the digging--stick of such tribes as the speakers of the Andamanese, the Australian, the Papuan, and a few Austric-speakers, like the Semang of Malaysia, the Nicobaris; as well as Californian Indians {12--I}, the Bushmen of South Africa and many others, which soon after turned it into the dibble of the incipient food producing phase of the cultivation of roots, tubers and rhizomes {247--I}. This phase is missing in the archaeological records of the Western cradle of food--production in the Middle East.

257--I. To those, particularly the Linear Evolutionists {215--I}, who believe that it was the stimulus of the desiccation that led man in the Middle East and elsewhere to the domestication of plants and animals, the instances of the Bushmen of the Kalahari Desert in South Africa who live there for centuries [Coon, C. S., *OR*, 1963, p. 649], and the Australians whose antiquity in their present habitat harks back to the Kartan culture of c. 10,000 BC [Tindale N. B., 'Culture Successession in South Eastern Australia', *R. Austral. Museum, XIII* 1957] pose, indeed, a challenge. Similarly, the domestication of animals such as the pastoralism involves, does not necessarily lead to the plow agriculture, for we know the rearing of cattle never led the Bantu people[46] to harness an ox to a plow and they have remained horiculturists [Lowie, R. B., 'Subsistence,' *General Anthropology*, ed, Boas, F., Boston, 1938, pp. 243–4]. The ancient Mexicans knew the wheel, but they did not use it for transport, or for turning the pottery on it. Similarly, the ancient Peruvians had domesticated draft animals, the cameloid llama and the Alpaca, but they too did not yoke them to the plough. It shows that the tradition and taboos also seem to have played a selective role in the acceptance of the elements of the 'diffusionism', which is again gaining ground as a means to seek explanation of various processes of the mechanics of the human process. In the same way, instances of regression of culture are also on record.

258-I In Australia very little culture change seems to have taken place since the time of the Kartan culture, which has typologically been correlated with the Archaic Hoabin-hian of Southeast Asia [McCarthy, R. H., 'The Oceanic & Indonesian Affiliations of Australian Aboriginal Culture', *J. Polynesian Soc.*, LXII, 3 1953]. The first division of labour between the sexes in which the male was the hunter and the female became the gatherer seems to have taken place in the proto-Archaic stage as we have noticed earlier {12-I}. Java and

46 - The Bantu is a family of African languages spoken by about 50 million persons in the region south of the Sudano-Guinean area. The more important among them are Swahili, Zulu, Congo, Luba-Lulua, Luganda, and Nyanja. Some scholars believe that the ancestors of the Bantu originally came from the area around the Bahr el Ghazal from Kordofan on the north, and Lake Chad basin in the west. They then went to the lacustrine area which became the region from which the Bantu later spread over Africa in a series of grat migrations. L. Hamburger has pointed out certain basic linguistic features apparently common to the Bantu languages of Africa and the Dravidian of India ['Indians in Africa', *Man*, 56, Feb., 1956.]

China have yielded the earliest traces of man and his culture { 4-I }. The various Pithecanthropus types that have been found in the early Mid-Pleistocene. Djetis Beds, in Java and the post-Nihowan Choukoutien cave deposits in China [Zeuner, F. E., *Dating the Past*, Lon, 1946, pp. 270-9] belong to Homo erectus hominids. Homo sapiens in his earliest form appears at Tze Yang (Mid-pleistocene) in China and of a later period at the Upper Cave of Choukoutien. In Java two skulls from Wadjak, dated the end of the Pleistocene, are primarily sapiens and resemble modern Australian aborigines. In North Borneo a fully sapiens Australoid skull { 167-I }, c. 40,000 yrs old, has been found in Niah Cave { 167-I }. " The Djetis Pithecanthropi, the Trinil Pithecanthropi, Solo, and Wadjak, " observes Coon, " may represent successive invasions from a center of Australoid evolution somewhere in the north, such as Siam or Indo-China. If Java was a periphery of Southeast Asia, Australia is a periphery of Java. We do not know when human beings first began to bother the kangaroos by appearing in Australia.. The oldest Carbon-14 date yet obtained from an archaeological site is 6740 ± 120 BC, associated with an archaic culture known as the Tartangan. Because a still more primitive culture, the Kartan { = Archaic Hoabinhian, 252-I B, 4 }, has been found in several sites below the Tartangan. Tindale estimates that the Kartan culture must have begun at least as early as 10,000 BC. No evidence is yet available which indicates that entry took place before 10,000 BC, the very time when Mongoloid peoples had begun pressing into Southeast Asia out of China. Linguistic evidence suggests that the dispersal of the Australoid peoples occurred less than 20,000 years ago.. All Australian languages are mutually related. The Papuan languages probably belong to the same family, so apparently does Andamanese and even, it has been claimed, the Mon-Khmer languages of Southeast Asia { 250-I }, which are spoken by Mongoloids, and in parts of India, where they are spoken by both Mongoloids and Australoids " [*OR*, 1963, pp. 406-7].

259-I We have noticed earlier that anthropologists generally place the Australians at one end of their scale { ' lower savagery ' of L. H. Morgan, 217-I }. The Australian society divides itself into various ' tribes ' (a breeding unit in Australian anthropology). The Tiwi tribe among them is reckoned as the most archaic human community in the world that has survived, but in their appreciation of fine arts they may rank well among the most civilized peoples. The Tiwis go nacked. Their only cutting tools are an all-purpose clam shell and a flaked stone axe reminiscent of a chopping tool. Their habitat, comprising the Melville and Bathurst Islands, is a forest area. Wild yams, wallabies, and opossums on land and shellfish at low tide are available in sufficient quantities. Every year the Tiwis burned over the landscape to keep down the undergrowth which impeded hunting. Hunting (with spear) is mens' responsibility, and women dig and collect all vegetable foods. To catch sea turtles and crocodiles the men travel by canoes. The Tiwi society lies on the fringe of a marginal continent, and are the most marginal of marginals. They have never spear throwers, stone-tipped spears, boomerangs, and other elements of the common Australian native culture. They represent the survival, with a little change, of a cultural level found elsewhere c. 70,000 to 100,000 yrs ago. But what is futher interesting that the Tiwis put great store in aesthetic achievements. A poet who could compose and sing a new and popular song, a dancer who could create a novel routine, and an artist who could paint stimulating designs on their funeral poles, rise to the top of the Tiwi social ladder. In the Tiwi Australian society a combination of hunting skills, good teamwork, and artistic competence give superior men the greatest procreative opportunities [Mountfort, C. P., *The Tiwi, their Art, Myth, & Ceremony*, Lon, 1958 ; Hart, C. W. M., & Pilling, A. R., *The Tiwi of North Australia*, NY, 1960].

260-I. Turing to other tribes of Australia or the Australians proper, we find them a step higher than that represented by the Tiwi. "In fact most anthropologists following Hooton," states William Howells, "have simply classed them (Australians) as a primitive branch of the White stock...Instead, I would rather say that the Whites are evolved Australians" [*Man in the Beginning*, Lon. 1965, p. 160]. They move ceaselessly over a large area in search of roots, the kangaroo, etc., for which they use spear, spear-thrower and the boomerang. They keep the dog (the dingo) which the Tiwis lack. They have no hoes and do no agriculture. The Australians are precisely like the Bushmen {252-I}. They hunt marsupials and the opossums. Their women dig up wild yams and other roots and vegetables with the digging stick. Canoes are in use where there is sufficient water. Their lithic technology is reminiscent of a late Upper Palaeolithic tool equipment. They have no pottery. [McCarthy, F. D. *Australia's Aborigines : Their Life & Culture*, Melbourne, 1957 ; Allchin, B., '*Australian Stone Industries, Past & Present*,' *JRAPS*, 87, 1957, pp. 115-36 ; McCarthy, F. D., *Australian Aboriginal Rock Art*, Sydney, 1958 ; Tindale, N. B., Culture Succession in South Eastern Australia from late Pleistocene to the Present', *Rec. S. Aust. Mus.*, XIII, 1957 ; McCarthy, F. D. 'A Report on Australia & Melanesia,' *Asian Perspectives*, V, 2, 1961, pp. 143-55] "In spite of their material simplicity," writes E. A. Hooton," the Australians have evolved such a terrifying intricate system of kinship and marriage rules, such a labyrinthine maze of kin behavior patterns, that only the most gifted anthropologists can grapple with their social organization. Australian relativity like that of Einstein is beyond the man in the street" [*Up from the Ape*, NY., 1954, pp. 609].

261-I. F.C.McCarthy's investigations have shown that all theories concerning Australia, based on the Linear Evolutionism (psychic unity of mankind), will have to be abandoned ['The Oceanic & Indonesian Affiliations of Australian Aboriginal Culture', *JPS*, LXII, 3, 1953]. Fr. Graebner pointed out that there are several related strata of culture in Australia and Melanesia, and that the traits from western Papua form an ancient diffusion into Australia [*Die Methode der Ethnology*, Heidelberg, 1911, pp. 192]. A. P. Elkin has linked some of the psyche practices of the Australians with those of Tibet. Hindu culture, which penetrated Indonesia so deeply, appears to have reached Australia in the music of Arnhem Land and in other ways [*Social Anthropology in Melanesia*, Kluckhohn, 1954, etc.]. Medical notions and practices of Australian aborigines," observes E. Drobec, "show definite connections with those of aboriginal tribes in India" ['Heilkunde bei den Eingeborenen Australiens', *Wiener Beiträge zur Kulturgeschichte und Linguistik*, IX, 1952, pp. 280-307].

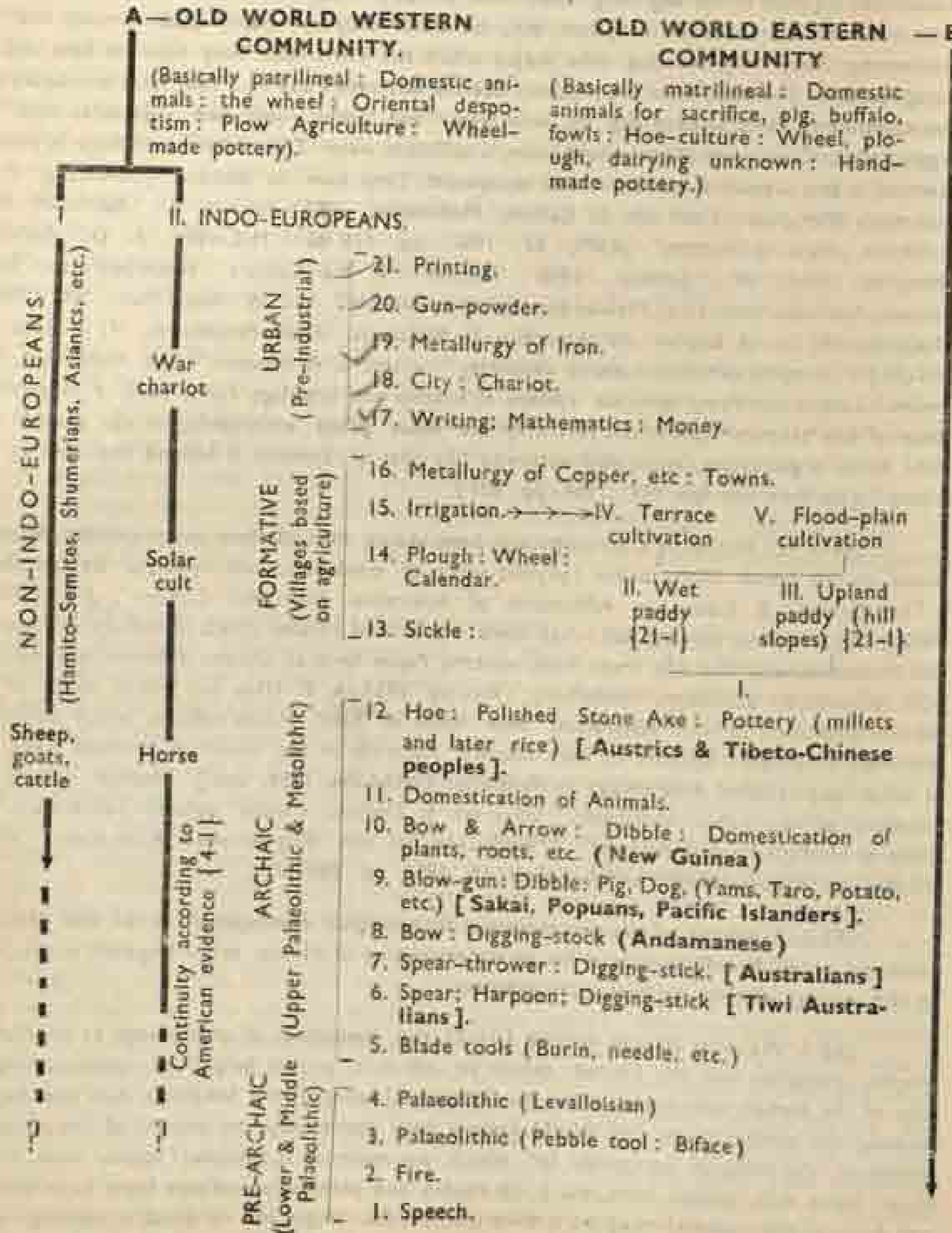
262-I. A column of the pre-industrial technological development in the Old World is given on p. 160. It will be helpful for an understanding of various major linguistic communities in the settings of their technological progress.

263-I. We have already noticed {11-I} the limitations of archaeology as an historiographic discipline and the limited extent to which it proves helpful in reconstructing the past of the human institutions in the humid tropical lands of the Southeast Asia and beyond, forming the habitat of the Old World Eastern basic community, on account of the perishable nature of the material equipment for which raw materials (bamboo, wood, bark, leaves, fibres, bone, skin, sinews, horn, etc.) are readily and plentifully available from both the flora and fauna of the region. Among hard materials that last longer and on which achaeology mainly counts, for instance, stone, has little role to play and that, too, merely as a working part of the cutt-

COLUMN OF THE PRE-INDUSTRIAL TECHNOLOGICAL DEVELOPMENT IN THE OLD WORLD

(Showing unbroken time-depths of the institutions of the two basic communities.)

– Succession from bottom upwards –



ing tools that hardly require a fine workmanship which we meet with in the case of the lithic technology of the Western community. The same holds good for late innovations like pottery and metallurgy. The pottery in the Eastern region was hand-made and it enables us in rare cases only to trace with confidence the treks of the movements of the communities who manufactured it. The Stone Age has lasted in the Eastern region down to our own times in a number of areas. The social systems (patriarchy in the West and matriarchy in the East) and economic patterns (mixed farming, i. e., plough-cultivation with cattle herding for dairying, transport, and farm labour in the West; and the horticulture-cum-fishing with no domestic animals in the East), too, differ among the two communities. In the Indo-Pacific realm no such challenges as posed by the Afrasian desiccation had to be encountered by the Eastern communiy and for this reason as well as the geographical insularity of its various areas, the process of culture change has been comparatively very slow. These basic contrasts between the two Old World human institutions often mislead or lead us nowhere when we try to interpret the past of the Eastern community in terms of the archaeology of its western counterpart, which dominates the 'general archaeology' of our times. The postulations of the Heliolithic School of Diffusion {219-I.} and a few others could not therefore gain a ground. The recent developments in the American archaeology appear very likely to be substantially helpful to the cause of the tropical archaeology of the Old World, for the pre-industrial material equipment and ecological factors on either side of the Pacific, inter-connected by marine contacts, were basically the same. The kitchen-middens {184-I} or shell mounds, shell industry, polished stone axe, hand-made pottery, etc., are among the distinctive relics of the tropical archaeology. However, the deficiency left by archaeology is much offset by ethnology of the region. The ecological factors here have allowed ancient institutions to survive into our age, and ethnology is therefore comparatively of more help as a historiographical subject in this respect.

264-I. Archaeology in Southeast Asia has not yet progressed sufficiently so as to provide us dependable links with ethnology for correlation. In the archaic Hoabinhian the pointed stone artifacts we find appear to be spear-heads. This may suggest a life on the part of these protohistoric cave-dwellers as approximating to that of the Tasmanians and the Tiwis among the Australian tribes. Tom Harrisson has assigned the date c. 7000 BC to the Mesolithic stratum at the Niah Cave in Borneo which contains 'Edge-ground tools' [*5000 Years of Stone Age Culture in Borneo*, Washington, 1965, p. 528] in the post-Archaic Mid-Hoabinhian period {252-I, 84}.

265-I. The Tasmanians are now extinct [Roth, H. L., *The Aborigines of Tasmania*, Halifax, 1899]. "The Tasmanians may be regarded with great probability," writes W. J. Sollas, "as representing an ancient race ..... which preserved almost unchanged the habits and industrial arts which existed in Europe during the late days of the Lower Mousterian age" ['The Tasmanians,' *The Making of Man*, ed., Calverton V. F., NY, 1931, p. 92]. The Tasmanians, like the Andamanese, and the first North Americans (Lithic stage) and the Boro of South America had the spear as a projectile, and no dog. This may mark the earliest technological horizon that has survived to our times. The Tasmanians had the chopping tools {4,160-I} and so did the Tiwi.

266-I. In the second technological stage represented mainly by the 'Blackfellow' Australians, there was neither the dog in the true sense, nor the bow. The earlier spear had now an accessory that imparted greater force and range to the projectile. This was the

spear-thrower, javelin-thrower, or *atatl* (Aztec word) of American archaeology, customarily fashioned of horn or antler. This has the effect of increasing the strength of the user's arm by the length of the spear-thrower, and gives him more mechanical power than his own body possesses. The innovation first appers in the archaeological records among the Aurignacians in Europe, who flourished during the Wurm II, c. 24,000 yrs BP [Movius, H. L., 'Radiocarbon Dates & Upper Palaeolithic Archaeology in Central & Western Europe,' *Current Anthropology*, I, 5-6, 1960, pp. 355-91]. The spear-thrower is the first mechanical device man has invented. The Australians have in addition the boomerang and its invention is often assigned to them [Montagu, A., *Man, His First Million Years*, NY, 1957, p. 122 : the boomerang is found in northeastern Africa, southern India, and among the Pueblo Indians of North America. Boas, F., *General Anthropology*, NY, 1938, p. 243]. The Australians have though been living in their present habitat for thousands of years { 257-I }, which has meanwhile passed through the desiccation resulting into the formation of the two post-glacial central basin deserts (Great Sandy Desert, Great Victoria Desert), they did not develop their economy further, and met the challenges by reorganizing the community to the extent that it forms to-day the mankind's most complex social institution. They have a single god, Numbakulla, instead of many. These two peculiarities suggest that the Australians have passed through various stages of religious development, when their economy has remained unchanged.

267-I. The Lithic stage Americans were more primitive than the Australians. They had spear-throwers and no dog. We have noticed how the Upper Paleolithic hunting communities having blade industries had occupied the vast core of the Eurasiastic continent before they crossed the Bering Strait { 5-I }. " The first kind of man to start these expansions," states Coon, " was the advance race of Coucasoids. Having evolved in Western Asia, they followed the game-trails into Europe, where they replaced the Neanderthals, probably partly by absorption. Fully evolved Mongoloids also expanded from their home in China, moving in two directions. To the north they made their way along the ice-free stretches of the Pacific coast to Bering Strait, over which they walked on dry land to America. Before they reached the Strait they apparently met some Caucasoid hunters, who had crossed the mountains from the west and had already penetrated the Amur river country and crossed over to Sakhalin Island and Hokkaido, where some of them sired the Ainus. A little of this Ainu-like Caucasoid element enterd the racial composition of the American Indians. To the south the Mongoloids moved into Southeast Asia and Indonesia, mixing with the indigenous Australoids and pushing them eastward to New Guinea and Australia ". [*Ibid*, p. 72-3].

268-I. Who originally were the earliest Americans or the Palaeo-Indians { 194, 199-I, I } of the Lithic period and how and when they entered North America have already been noticed in a number of contexts { 162-I }, together with the fact how two traditions of a lithic technology of an Upper Palaeolithic blade type have been gleaned from the archaeological data { 163-I }. They are known as the Palaeo-eastern and Palaeo-western. The former tradition emphasized the hunting of big game animals, including species which are now extinct. The projectile points used in spear-throwers, such as those found at Tule Springs, Nevada, U. S. A., carbon-dated c. 24,800 BP [Libby, W. F., ' Chicago Radio-carbon Dates, V.' Sc., 120, 1954, pp. 733-42], were the most characteristic artifacts of the Lithic period. However, more definite cultures seem to emerge by 10,000 BC, characterized by the presence of such projectile points as are called the 'Clovis Points' in the Great Plains, and the Folsom Points of c. 7932 ± 350 BC [Libby, W. F., ' Radio-carbon Dates, II', Sc., 114, 1951, pp. 291-6]. By 7000 BC a third style of points was dominant that was somewhat reminiscent of the European Solutrean.

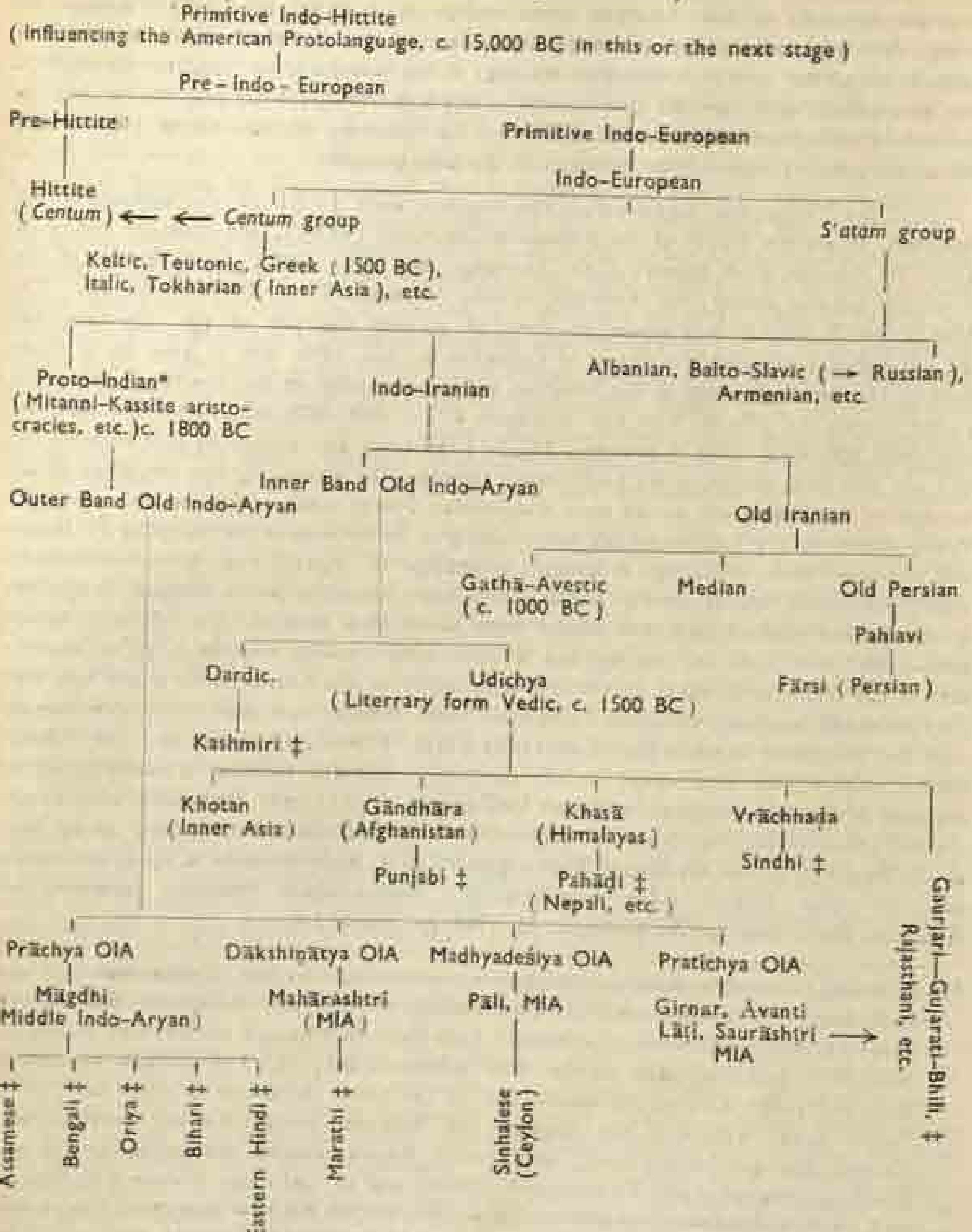
269-I. We revert again to the significance of the presence of the Indo-European linguistic elements in the American protolanguage of c. 15,000 BP { 5-I }, because its period falls well within the chronological brackets of the American Lithic culture. The evidence raises the issue of a very high antiquity of the Indo-European linguistic community. We have already seen how the Indo-Europeans appear on the scene of the Middle East at the turn of the second millenium BC { 107-I }. The discovery of the Hittite {108-I } has led to the reconstruction of the pedegree of the Indo-European.

270-I. Taking into consideration the linguistic facts { 5-I } in the context of the Amurians, an eastern branch of the prehistoric Caucasoids { 163-I }, the Tepexpan Man [De Terra, H., Romero, J., & Stewart, T. D., *Texpexpan Man*, NY, 1949], the presence of the Coucasoid features among the American Indians [Hooton, E. A. *Up from the Ape*. NY. 1954, p. 642], etc., it may appear to many of us that the role of the Indo-Europeans did not indeed begin with the landing of Columbus in AD. 1493, but it goes in antiquity back to the very beginnings of the American Indian community in the course of the Lithic period during the Würm II or the Wisconsin II (c. 24000-8000 BC), when the sea-level was about 200' lower than at present { 162-3-I }, affording easy passage by land between the Old and the New World, as we have already noticed. The glaciers of this late phase of the Ice Age or the Pleistocene period were disappearing slowly, summer after summer, when the Palaeo-Indians or the first Americans were coming in. In the wake of the retreating ice, forests and meadows were spreading. A strange assemblage of animals now extinct—mastodons, woolly mammoths, native camels, horses, and a huge species of bison—mingled in the lush grasslands. The Palaeo-Indians who hunted them moved from camp to camp. What is further noteworthy that both the Ice Age and its now extinct animals lingered longer in America than in the Old World. What strikes further in regard to the Palaeo-Indians is the fact that they possessed essentially an Upper Palaeolithic blade industry associated for its development with the Old World Western Basic Community { 4, 5-I }. This may suggest that the Palaeo-Indians belonged for their origin to this community and also indicates a possibility of the antiquity of the Indo-Furopean institution harking back to the Upper Palaeolithic times during the last phase of the Pleistocene. A probability of the Indo-European antiquity going back to the Mesolithic period has already been suggested by P. Bosch-Gimpera in his Spanish work published from Mexico [*The Indo-Europeans*: Archaeological Problems, summary by Gimbutas, Marja, *American Anthropologist*, 65, 1963, pp. 815-36].[47]

47—P. Bosch-Gimpera's some of the general conclusions on the development of the Indo-European cultures are: (1) The embryo of the Indo-Europeans lies in the Mesolithic; (2) Formation of several Indo-European groups occurred in the early Neolithic, reaching back to the fifth millenium BC; (3) The Kurgan expansion from the Inner Asia in the second half of the third millenium BC into the North Pontic area, Anatolia, the Aegean, the Balkans, central Europe, northwestern Europe, the east Baltic area, and central Russia brought destruction to the old European Neolithic and Chalcolithic cultures and to the early Bronze Age Aegean and western Anatolian cultures and that the impetus for this expansion lies in the Eurasian steppes in the lower Volga basin and beyond the Caspian Sea; (4) The presence of separate Indo-European groups or languages in the early second millenium BC, the Hittites, the Mitannis, the Kassites, the Luvians, and others

[On page 165]

271-I. Pedigree of the Indo-European linguistic family :—



* The Proto-Indian seems to have been one of the earliest Indo-European languages in India to have been influenced by the Austric linguistic family as a result of crossings between the Western and the Eastern basic farming communities in the Gangetic valley.

‡ NIA = New Indo-Aryan. MIA = Middle Indo-Aryan. OIA = Old Indo-Aryan.

272-I. The third technological stage in which the development of the missiles proceeds further from the spear-thrower onwards into the harpoon on the sea-coast, and into the blow-gun in the interior. The latter development is found among the Sakais of the Malay Peninsula. The blow-gun is a long tube from which poisoned darts are blown. It occurs in Indonesia and parts of South America. { 209-I } " There is no way of knowing for certain ", observe J. H. Steward and L. C. Faron, " whether so remarkable a weapon was independently invented twice.. The blow-gun is also known from the Mochia culture, c. 200 BC — AD 450, of Peru. The pre-Columbian occurrence of the blow-gun in South America does not, of course, prove that it was invented in that area. It may have been introduced by some unknown migrants from Asia, a possibility that is strengthened by the occurrence of a number of other Oceanic and Asiatic traits in the same general area as the blow-gun " [op. cit. p. 42-3]. Further, with the Sakais begins also the pile-dwelling { 185-I }.

273-I. With the end of the last glaciation, the Würm-Wisconsin of the Pleistocene { 4-I }, arid conditions giving rise to the formation of the Afrasian (The Kalahari and the Namib in South Africa, the Sahara including Libya, Somaliland, Arabia, Iran, the Thar, Turkestan, the Takla Makan, and the Gobi) and the Australian (the Great Sandy Desert, and the Great Victoria Desert) deserts in the Old World; and the North American (Baja California, Mexican Plateau, Mojave, the Great Basin, the Wyoming Basin, and the Columbia Plateau) and the South American (The Coastal Desert of Peru, the Atacama, the Western Argentina, and the Patagonian Desert) arid lands in the New World. The game became rarer and rarer and the newly developing floral and faunal conditions of the dawning Neothermal period posed new challenges to man in respect of food-getting. The sufficient quantity of the game which the hunters could bag either with spear or spear-thrower, each one of them having a range of about 75' and 150', respectively, was not available a little later with the same weapons and skill, as the huge Pleistocene animals were disappearing { 271-I } and there place was being taken by smaller ones. The blow-gun was a more effective machine than the spear-thrower, having a range of about 300'. But this new innovation could not fulfil the requirements fully in the environments where the game was getting scarcer and scarcer. The aquatic fauna, too, was thinning away in the rivers and lakes, on account of the gradually diminishing water supply and increasing evaporation.

274-I. The sea, however, was immune to these climatic and consequent hydrographic changes caused by the beginning of the Neothermal. There the fish, mussels, oysters, crabs, etc., were as plentiful as ever. New devices therefore began to be developed for a more efficient fishing. This led to a distinctive evolution of the spear as a missile, i.e., from the spear-thrower to the barbed harpoon on the sea-coast, a development parallel to that of the

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[From page 163]
who were originally the Kurgan peoples, speaks for the existence of separate tribal units or languages; (5) The diffusion of the Indo-Iranians to Persia and to India before or after the middle of the second millenium BC, seems to have been connected with that of the Bronze Age Andronovo culture bloc east and north of the Caspian and the Sea of Aral. Its offshoot, called the Tazabag'jab, shows a constant expansion southward and eastward around the 15-14th cent. BC [Bosch-Gimpera, P., *Les Indo-Europe'ens, problemes archeologique*, tr. French, Lantier, R., Paris, 1961].

spear-thrower into the blow-gun in the interior { 272-I }. The harpoon is simply a spear with a barbed and detachable head that is fastened to a strong rope carrying a float at its far end. The hunter is paddled by an assistant and waits for the first whale, seal, shark, or other large fish or even the hippopotamus to show its head when he at once hurls his weapon into its neck. After a while, second rope fastened to the bank is tied at the end to the float, and the hunters pull both ropes till the beast is landed and can be speared. This form of fishing requires a large-scale co-operation. Family-bands were therefore organized into such co-operatives and they settled on the sea-coast in the form of a nucleated villages, because, the new economic activity demanded such a pattern of human habitation. Since the food-supply from the sea at hand was plentiful, these villages became permanent settlements. The vestiges of these mankind's earliest coastal villages occur as the kitchen-middens or shell mounds which have a global distribution as we have noticed earlier, { 184-I }. But this diffusion took place at a later stage when the bow and the dog and still later the pig and pottery were added to the equipment of this third phase of the development of the missiles. We have still among us such fishing-based coastal villages as of the Nootkas, the Haidas, the Kwakiutls, and others of the North American Pacific coast { 197, 212-I }.

275-I. The above facts again remind us of C. O. Saur's theory that the domestication of plants or cultivation, the most momentous event of the economic history of man { 3-I }, was pioneered by the coastal fishermen and mussel-collectors of the Old World Eastern basic community { 184-I } of the Indo-Pacific realm. They began the first specific working with plants and plant products in net and trap making, fish-poisons, body-paints, etc., with the aid of the dibble { 247-I }, and thus arose the root-cultivation as man's first attempt at food-production. The edible seeds and other vegetable products gathered involved grinding and thus first the edge-grinding and at a later stage the polished stone axe came into being { 182-I }. The sedentary life raises the question of storing more than do other modes of life. The gourd and bamboo-vessels had limited capacities. The mat-weaving from which subsequently originated the cloth-weaving, and basketry in the 'plaited' and 'coiled' forms were the first answers of man to this fundamental need of a new type of living. These crafts must have been pioneered by the people possessing a bamboo-based culture, obviously by the Southeast Asians.

276-I. The above facts are important so far as India as an adjacent region to the cradle of these early technoeconomic innovations in Southeast Asia is concerned, because it was the Austric-speakers who in the light of historical linguistics { 169-I } possessed and passed the above inventions to a pre-Vedic Indo-European agricultural population in the Gangetic-Brahmaputra basin. The presence of the Andaman Islanders in the Bay of Bengal, who have a language distinct from those of the Austric family, have the bow and not the dog, like the Semangs, shows, that they too were perhaps on migration while in the Andaman Arc and their further progress in this direction seems to have been checked by the submergence of that part of the Arc which connected the islands with the subcontinent as a portion of the Southeast Asian Island Arc { 154-I }. It is in the Andamans that we find in the Indian waters or the shell mounds at two places, viz., Cadellganj [Holland, Sir T. H., 'Ancient Kitchen-midden in the Andamans', *RGSI*, XXXI, 1904, pp. 45, 107-8] and Chatham [Stoliczka, F., 'Notes on the Kjökkenmöddings of the Andaman Islands *PASB*, 1879, pp. 13-23] and on the Indians mainland at Chandwar, the site of Old Cuttack in Orissa [Ball, V., 'On an ancient Kitchen-Midden at Chandwar, near Cuttack', *PASB*, 1876, pp. 120-1]. But so long as they are not excavated

it is difficult for us to correlate them with the culture of the present inhabitants. But in view of what we have noticed above, the two elements might belong to the Eastern culture-complex. " The original Negrito speech of India ", writes S. K. Chatterji, " seemingly survives in Andamanese, which as a language or dialect-group stands isolated. Negrito elements, judging from some racial types indicated in Gupta India as in the frescoes of Ajanta, seem to have survived to a very late period; but now it has been almost entirely eliminated. But it may be that here and there a word indicative of some object, some element from the flora or the fauna, has been saved after the total disappeance of Negrito language from the soil of India: and I think one such word may be Bengali *bādul* = ' bat ' (the basic element is *bād—the Old Bengali equivalent would be **bād-aḍ-ī*, *-aḍī* being a pleonastic affix with the *-la-* element so common in Apabhraṁśa and New Indo-Aryan : with this **bād*, otherwise unexplained, may be compared Andamanese *wòt-da*, *wāt-da*, *wòt*, *wāt* = ' bat ' and the element *pet*, *wet*, *met*, *wed*, *wāt*, *wat* in some of the aboriginal languages of Malaya and Indo-China of the Austric stock, some of which are spoken by Negrito tribes—e.g. *tra-pet*, *sa-pet*, *hampet*, *ša-met*, *ha-met*, *ka-wet ka-wed*, *gan-āt*, *kat* < *ka-at (?)*, *kava* < **ka-wat*, *uōt* " [*IA & H* pp. 34–5].

277-l. The bow and arrow has been reckoned as the most important missile for a long duration of millenia till the invention of gun-powder which was known in China during the middle of the first millenium A.D. The horizon of this fourth phase of the technological development { 262-l, 8 } is represented by the culture of the Andamanese and the Austric-speaking Semangs of the Malayan interior. It is here that we first come across a correlation between an Austric-speaking community coming into context of the techno-economic developments in the Indo-Pacific realm. The Aterians of North Africa are often credited with the invention of the bow [*HM.* p. 87], but the evidence based on the presence of typicel tanged and barbed points resembling arrow-heads is not conclusive. The first definite evidence comes form the Mesolithic western Europe, where the bow occurs in the cave paintings at Castellón in Spain [Oakley, K. P., *Man the Tool Maker*, Lon., 1958, p. 66], [Titiev, M., *Sc Mn*, 1954, pp. 343–4] In the Indo-Pacific realm the challenge of a decaying flora and fauna subjected to the post-glacial desiccation in the interior, was not within the reach of the blow-gun. The necessity is the mother of invention. So in the fourth phase of the development of the missiles we find the spear in the form of arrow projected from a bow. The invention increased the range of the missile from about 250' of the blow-gun to nearly 500' of the bow and arrow. This enabled the hunter of the interior to kill more animals within a given a time. Thus the supply of food was increased in proportion to the deterioration of the conditions of the availability it of the game and vegetables.

278-l. The dog appears next in the fifth technological stage. We have earlier referred to the dog as an aid to the economic pursuit { 9-l }. The animal domestication of this nature demonstrates that a living animal is more useful economically than a slaughtered one. The domestication of herbivorous animals reached a rudimentary stage of symbiotic mutualism between the two types of beings among the pastoralists of the East African rift valley. " Wondorabo are employed to do the slaughtering, " writes C. D. Forde," for no Masai should kill a domestic animal. Cows are never slaughtered. They are indeed treated with the greatest care and much affection " [*H E & S*, p. 295]. " So in the Mesolithic times," as states Forde again, " the bow became the major weapon .. Another ' invention ' of the hunting stage was the dog. Dogs are affable beings, and the chances are good that they look to hanging around the human camps hoping for scraps, and were tolerated in this way " [op. cit., p. 115]. " The dog's

comparative age", states R. H. Lowie," is strongly indicated by its distribution...the dog existed in America in three main and sixteen lesser verieties, being found as far as the extreme tip of South America. From comparative anatomy we learn that all these breeds go back to a single ancestor in Asia. The (American) Indians therefore must have brought dogs from the other side of Bering Strait." [*Cultural Anthropology*, NY, 1955, p. 38-9].

279-I. The Archaic of the Indo-Pacific realm attained its climax when all the above three main working components of economic mechanism of this momentous phaze, viz., the coastal fishing on the littoral and gleaning in the interior, the bow and the dog, all began to function conjointly, providing sufficient leisure to the community to pursue non food-producing activities. The instinctive urges for the inventiveness, aesthetics, religiousness, altruism, and the quest for the unknown began to seek their expression and the religion and culture commenced to grow from simpler to complex. Ceremonialism, grave-goods, sacrifice, myth, and other institutions began to develop. The domestication of the dog showed way to the domestication of other animals. The Eastern community began to practice it for maintaining the buffalow, the pig, the fowl for sacrifices. The presence of the pig shows a further improvement in the production of surplus food because it presupposes a settled village life. It appears that by this time the digging-stick had assumed the form of a dibble and production of yams, taro, and other roots and tubers had already begun.

280-I. This is the manner in which the food-gathering seems to have given rise to the food-production with the introduction of the root-growing of which the dibble is the symbol in the Eastern basic farming community; and in view of these facts and their interpretations, the food-production through the domestication of plants, i. e., farming, does not appear to have originated in the hoe culture { Fn 5 } of the Western basic community which is symbolized by the sickle; obviously, because the latter marks the next technoeconomic phase after that of the root-growing through the dibble culture in the development of agriculture.

281-I. The dibble culture still persists among the simpler cultures in many parts of the humid tropical regions. We have noticed that its prototype was the digging-stick of the hunting-gathering stage with which the woman dug out roots and did a number of other jobs. Experiments and experience gathered by her round about the habitation must have led to regular form of root and plant growing. The Boros of the Amazon selvas in South America hunt the game of the forest, but this is relatively meager; the main dependence is on the dibble culture. First the forest is cleared with the fire. The tree stumps left decay soon or are reduced by the swarms of ants. When the rains are over undergrowth and creepers are burned out. The ground is then broken by the men with heavy clubs and the women go out in parties to plant the crop with the dibble. Planting can go on throughout the year. The important crop raised is manioc, from the roots of which cassava is prepared. The first tubers can be dug out about eight months after planting. Manioc is propagated by replanting cuttings from the old growth each of the separate hole. Other root crops, especially yams and sweet potatoes, are grown in smaller quantities, while pumpkin seeds are planted and then left to propagate themselves. Peppers, beans, pineapples and a few fruit-bearing trees are also grown. Manioc is a starchy food, without vitamins and minerals. It contains the fatal prussic acid in its juices, which is strained off. The remainder is then left to dry. It is then ground with mealing stones into flour { 256-I } which is heated in a platter to

remove more volatile poisonous matter. After this lengthy process the flour is kneaded with water and lightly baked on a clay dish to form a tough bread. Honey is important in drinks prepared for feasts. The women make netted hammocks for sleeping, basketry and coiled pottery. The Boros use blow-guns having neither the bow nor the dog. The group does not live in scattered huts but occupies long houses like those of the Dayaks of Borneo {84-I}. The fires are kept continually burning. The Boros are a patrilineal exogamous people. A pragnant woman among them has to avoid animal food and her husband cannot even touch a weapon or article connected with the hunt during the period before his wife gives birth to a child. When the child is born its mother is free to do work, but the father must remain in his hammock for a month. Cultivated ground is exhausted normally after three harvests and a new plot must then be cleared to which the habitation too is shifted. However, the new site is never far distant from the old and remains within the traditional boundary of the community.

282-I. The flora was decreasing and with that was decreasing the fauna as a result of the post-glacial desiccation and with all that were diminishing the opportunities of a hunting-gathering life. What is indeed more unfortunate that man himself has been playing a role as an effective element of this destructive process by setting fire to forests. Primitive man's reasons for the burning-over of land have been : (1) to clear forest for agriculture; (2) to improve grazing land for domestic animals or to attract game; (3) to deprive game of the forest cover or to drive game out of it; (4) to kill or drive away predatory animals, ticks, mosquitoes, etc.; (5) to repel the attack of enemies or to burn them out of their refuges; (6) to expedite travel; (7) to protect villages, settlements, etc., from great fires by controlled burning; and (8) to enjoy the fun of fires as an spectacle.

283-I. Man's contribution to the development of the conditions causing scarcity of water that feeds the flora through his act of setting fire indiscriminately leading him from crisis to crisis of food shortage has certainly been not an insignificant one [Marsh, G. P., *Man & Nature; or Physical Geography as Modified by Human Action*, NY, 1864 ; Voeykov, A. I., 'De l'influence de l'homme sur la terre', *Annales de geographie*, X, Paris 1901; *Vozdeistvie stat'i*, Moscow, 1949 ; Thomas, W. L.; Sauer, C. O.; Bates, M.; Mumford, L., ed., *Man's Role in Changing the Face of the Earth*, Chicago, 1956]. His predatory consortism with the flora has not yet ceased; nay it is on increase. The growing scarcity of water and increasing vagaries of rain-gods has increasingly upset the balance between man and his food that has indeed given rise to a mal-adjustment in relations between man and man and consequent erratic distribution of human organism against environmental factors; or speaking in other terms, we may say that man is loosing his symbiotic mutualism with his ownkind, which marks a step of retrogression from the stage of Humanity {242-I, III}, which prescribes for its perfect fulfilment a complete symbiotic mutualism between man and man {243-I, III}; and on achieving this state the mankind would probably be able to develop the stage of Greater Humanity {242-I, 4}. Man's predatory consortism with vegetable kingdom is interfering adversely with the course of equilibrium that nature normally maintains between the life and its sustainer the water during a warm interglacial period; and, in view of the present rate of the progression of general dryness on account of human predatory role, the aridity expected at the climax of the ensuing Neothermal period which appears to be

the fourth interglacial of the Pleistocene sequence,[48] is very likely to come much earlier than AD 20,000, the time calculated by G. Gamow [*Biography of the Earth*, Lon, 1949, pp. 222, 226] and others for the peak of this period. The crisis may well lead us to take recourse to the desalting of sea water in order to meet the deficit of fresh water for irrigation and industries.

284-I. We have now completed a cursory review of the hunting-gathering economic stage[49], its mechanism, and its mechanics. The development of technology is mainly a human response to the challenges of the ecological conditions varying with hydrological changes from the peak of a glaciation to that of a desiccation. The question may arise why other

48 – " There are three major factors ", observes George Gamow, Professor of Physics, University of Colarado [*The Birth & Death of the Sun*, Lon, 1950], " affecting mean summer temperatures in the Northern and Southern Hemispheres: (1) the elongation of the Earth's orbit; (2) the inclination of the Earth's axis of rotation to the plane of the orbit; and (3) the precision of the axis of rotation, which, together with the advance of the peripelion, determines whether the Northern or Southern Hemispere will be turned toward the Sun to have a summer season when the Earth passes through the most distant point of its orbit. The glaciation periods in either of the two hemispheres will occur when the hemisphere in question is turned toward the Sun only while the Earth is passing through the most distant part of its orbit, and when at the same time the orbit has the maximum elongation, while the inclination of the Earth's axis of rotation is at its minimum...the conditions favouring ice formation occurred five times during the past 2,50,000 years...the last glacial period (Würm-Wisconsin), was not as severe as the previous ones... Turning our attention to the future now; we find that the condition for the glaciation of Northern Hemispere will be again fulfilled in AD 50,000 and AD 90,000; and it must be expected that during these epochs much of North America and Europe { and the Extra-Peninsular division of the Indian subcontinent—author } will be covered by thick sheets of ice... In Europe the ice descending from the Scandinavian highlands and brushing off the cities of Oslo, Copenhagen, Stockholom, and Leningrad will probably stop short before reaching London, Paris, and Berlin. The interval of time separating us from the next advance of ice is ten times longer than the time that has elapsed since ancient Egyptian civilization, and it may very easily happen that when the glaciers begin to descend from the polar regions all these cities will be of only historical interest to contemporary archaeologists...but before this future advance of ice the climate of the Earth is bound to become much warmer than it is at present, and that the maximum will be reached about the year AD. 30,000 " [*Biography of the Earth*, Lon, 1959, pp. 225-9].

49 – Not 'socio-economic' because the social organization is a component of technology in its wider meaning : the functions of technology demanded more energy than an individual can offer and the social organization comprises one of the first answers to this requirement, the domestication of animal the second, and the development mechanical devices to produce and harness the thermo-chemical energy introducing the Industrial Revolution (1750→) is the third.

animals have not undergone such a change and the answer lies in the deficiencies of the human body { Fn 39 }. A further factor that lies behind the development of technology in the human species is the largest capacity of the brain of man in the animal kingdom { 232-I }. Other animals do not possess it and therefore many of them they have failed to face the climatic extremes and their consequences, and have therefore perished, whereas man has survived and will survive. Now let us review the transitional conditions that seem to have led man to embark upon the second economic stage based on food-production which is still continuing and in the course of which the human life has become sedentary and able to produce more food than it needs; the two factors that rest at the base of civilization or the urban life: or in a sense, it may be regarded as the Fall of Man from the Golden Age or the Satya-yuga, or in another sense the Pre-Class Stage of the Marxist approach to the interpretation and appreciation of history.

285-I In the course of the third technoeconomic stage marking the employment of the blow-gun and the double-barbed harpoon together with the dibble culture, a stage arrived when a further climatic challenge began to defeat the aim of these innovations and the crisis was averted by the entry of the bow and the dog, whose presence characterizes the fourth and the fifth stages, respectively. The bow and the dog, rather than the pottery and the polished stone axe or celt, have indeed a better claim to mark the end of the Archaic[49] and beginning of the Formative stages { 116-I, 3 : 199-I }, for the latter marks the ends and not the means of the change. The combined action of the above two innovations only are likely to provide sufficient leisure and other facilities for the peoples of the 4th and the 5th technoeconomic stages (hunting-cum-dibble culture) to elaborate the hoe culture out of that of the dibble, when people may have come across the seeds of various types of weed grasses, namely, the small grains or millets and thus the root-growing must have given rise to the seed-growing. The seed-growing had two successive phases, the first or the earlier one having been connected with the millets and the second or the latter with rice, maize, wheat, etc.

286-I. The hoe culture essentially involves making a clearing by girdling and later by polished stone axe { 188-I } or topping the tall forest canopy, slashing the lower layers and burning as much as possible to let light down to the ground, give free space, and fertilize the soil. Seeds, roots, and tubers are placed in the holes in the dibble culture as

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49 – "I do not know", states Vernon Leslie, "of any readily available description of what is meant by the term 'Archaic'. Archaeologically, a detailed and comprehensive definition does not exist......It is a reflection of its hunting–gathering culture stage......The Archaic people were nomads, following the game and the ripening of wild vegetable foods in season ..it lacked pottery and bow" ['What is Archaic?' *New World Antiquity*, Lon, XIII, 5-6, 1966, pp. 47-54]. The term, as it is employed generally in the American archaeology, has already been noticed { 199-I, 2 }. We are adopting it to cover the major period of the Upper Palaeolithic represented by the blades, the Mesolithic by microblades or microliths in the case of the archaeological manifestations in the Old World Western region, and the appearance of the edge-grinding in the field of the archaeology of the Old World Eastern region (Tropical archaeology). It ends in both the areas with the introduction of the cereal cultivation { 262-I, p. 160 }, the pottery and sedentary community life

we have seen, but hoeing is required for cereals of the Old World. Maize, however, can be planted in drilled holes, and therefore the *milpa* of America was basically a dibble culture. The coa of the Mesoamerican Indians was a dibble, and the *taclla*-dibble of the Puruvians had cross-peice as the foot-rest so that the implement could be employed as a crude spade. The latter form is used also by the Puebloes in North America and the Maoris of New Zealand. The plow is a further development of the dibble after the hoe. The hoe enables the cultivator to scrap the soil after loosening it. While the workers who use the digging stick shove the tool forward, and those who use the dibble pull it towards themselves. The simplest form of plow seems to be the dibble pulled forward instead of being showed forward. In Africa, the Americas, and the South Seas, the dibble breaks the earth preparatory to planting. The hoe is essentially an Old World tool. The African broad-bladed, short-handled iron hoe contrasts with the European long-handled, narrow-bladed implement. The plow, which puts the domesticated animal to work, is a Eurasian or the Old World Western farming tool and is not found elsewhere.[50]

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50 - The above description incidentally reminds us of postulations that connect the term *ārya* (the Aryan peoples whose language of culture and religion belongs to the Indo-European familly, 271-I) with the root *ar*, which may or may not have substance, is, however, worth mentioning here. "Let us now take," writes Z. A. Ragozin, "the Sanskrit root *ar* of which the general and original meaning is 'plow'. We find it intact in Latin and Italian *arare*, in Slavic *arati* — 'to plough'; in Grece *aratron*, Latin *aratrum*. Tchekh (so-called Bohemian, a Slavic language) *oradlo* — 'a plough'; in English *arable* — 'fit to be ploughed'; in Greek *aroura*, Latin *arvum* — 'a ploughed field'. It has even been suggested that the name *Arya* itself is connected with this root, and that the people who took it for their own name originally meant to call themselves, 'the people who plough, in proud distinction from their sheep-raising, steppe-roaming, robber-neighbours, the Tura ('Arya and Tura', in later historical times 'Erān and Turān', the same distinction ever, the same opposition, the same battle-cry. *Eran*, *Eranian* is only a slightly altered form of *Aryan;* so is *Erin*, the national name of Ireland). At the time at which we begin to know them, 'Ārya' meant 'noble', 'exalted', 'venerable'; the name had become something almost sacred, it embodied the Aryan people's national pride, — or a feeling deeper still, more intense, enduring, and inspiring: their pride of race and that down to a very late period; for was not Darius, the great Persian king, careful to preface his family genealogy in his famous inscriptions by the statement: 'I am an Ārya, the son of an Ārya'?" [*Vedic India*, Z. A. Ragozin, Fisher Unwin, London, 3rd ed., 1195, p. 61-62]. "The name Ārya", states J. P. Widney, "comes to us through the Sansksit, the oldest of the written tongues of the Aryan peoples. In the Vedas the Brahmins speak of their ancestors as the Arya and the older homeland as Aryāvartta, that is the homeland of the Arya. In the Zend, the Iranic branch of that older Aryan speech, the word is Airya. Yet the word in both the Sanskrit and the Zend is only a derivative. The root form goes back to an older speech even order than that of the Brahmanic Vedas or the Iranic Avesta, and is found in other Aryan speeches than the two just instanced. In Latin it is found in *arare;* in Greek, *aroun;* in Slavonic *orati;* Gothic, *arjan;* Welsh, *arad;* Old English, *erien*. In all, the meaning is to plow or till." (*Race Life of the Aryan Peoples*, J. P. Widney, London, 1907, p. 4).

287-I. The dibble and hoe cultures share much in common technologically and are generally known under the term the shifting cultivation for which we have in the present study adopted the word horiticulture in contrast to agriculture, both of them characterising the farming systems of the Old World Eastern and the Old World Western regions or communities. We have already taken note of the American Indian milpa cultivation which is essentially an advanced dibble culture reaching the stage of the grain cultivation and finds its counterpart in Southeast Asia under the Indonesian term the *ladang* [Marsden, W., *The History of Sumatra, Containing an Account of the Native Inhabitants, with a Description of the Natural Productions*, Lon, 1783 : . etc.]. It is known under various names in different regions and countries :—

1.	Batak Lands of northern Sumatra ..	.. J-uma
2.	Assam (India) hill tribes	.. Jh-um
3.	Thailand ..	.. tam rai
4.	Indo-china ..	.. rai
5.	Philippines ..	.. Kaingin
6.	Burma ..	.. taung ya
7.	Sri Lanka ..	.. chena
8.	Madagascar	.. tavy
9.	Uganda ..	.. chitemene
10.	Mexico ..	.. coamile
11.	Yucatan & Guatemala	.. milpa
12.	Venezuela ..	.. conuco

India

1.	Assam hill tribes ..	.. Jhum
2.	Hill Bhuiyas ..	.. dahi
3.	Khonds ..	.. podu
4.	Gonds ..	.. dippa
5.	Baigas ..	.. bewar
6.	Bhils ..	.. dajhia
7.	South India ..	.. Kumri

" From the stand point of geographic distribution ", states H. H. Barlett, " the most interesting of the word is *uma*, with clear cognates in languages all the way from Fiji to Madagascar " [*Fire in Relation to Primitive Agriculture & Grazing in the Tropics* : Annoted Bibliography, Michigan, 1955, p. 5 68].

288-I. Ordinarily, in Mexico, Central America and northern part of South America maize and beans are mainly produced through the milpa system. In Brazil, however, the chief crop is a root the manioc. In the ladang of Southeast Asia the primary crop is generally the upland paddy { 21, 41, 43-I }. In both the Old World and the New a root crop is likely to follow the grain. From New Guinea eastward root crops have not been supplanted by grains as the mainstay of agriculture. The terms for rice having an Austric origin { 26, 36, 52, 68, 90-I, 168-I } though occurs in the Old Indo-Aryan languages of the second millenium BC, and in the archaeological contexts at Hastinapur II, c. 13-12th cent BC { 51-I }, Navdatoli II (Māhishmati), c. 1700 BC { 88-I }, and the Lothal Harappan, c., 2000 BC { 89, 91-I }, rice is still in the process of diffusion in some parts of Southeast Asia and Oceania in the Pacific basin. " Even as late as the arrival of the Europeans ", writes J. E. Spencer, " rice was not the dominant food crop on Java, and rice has not spread througout the Indies even today. Many mainland culture groups do not yet grow rice,though their environment would permit it. Modern statistics suggest that rice culture has spread very greatly in the last century, so that one can even describe the agriculture of Thailand today as dominated by rice. The expansion of rice growing has faced not only cultural intertia among many peoples but also climatic limits. North China never can make of rice its chief crop, since the supply of water is limited and upland rice does less well than several other crops available to the Chinese " [*Asia, East by South*, NY, 1954, p. 88]. Africa often has one or more small grains, vaguely called ' millets ', or sorghum (Indian, Jowār), as the grain

crop, and in many parts of the Old World manioc has largely replaced yams (Malayan, *ubi*). After the primary harvest of rice under the ladang in Malaya the field produces a succession of foods until the fertilizing effect of the ashes wears off and the weeds become too numerous and bothersome. Then comes the 'rotation' and lastly the abandonement. "Where a large population is built up", states J. E. Spencer, "the frequency of 'rotation' increased, and the extractive drain upon the reproductive forest became great; a landscape could not bear up permanently. Suggestions have been made that the Khmers of Cambodia and some early south Indian and Ceylon peoples used shifting culture until they so overworked the available landscapes as to induce soil exhaustion and deminishing agricultural returns, producing decaying societies ripe for the militant raids of expanding neighbors" [*op. cit.*, p. 85]. The same reason is ascribed to the downfall of the ancient American Indian civilizations.

289-I. The origin of wet-paddy {21-I} or the Malayan *sawah* in contrast to *ladang*, which is today the mainstay of the larger part of Asia, including the eastern and southern India, is somewhat puzzling. We have recorded a few opinions in this respect {23-I}. The wet-paddy cultivation permitting the existence of settled habitations and sedentary co-operative group life in the form of nucleated villages, thus began in the history of the Old World Eastern community in the deltas, on rivers, lakes and swamps, and this mode of life warranted pile-dwellings {183-I} and the like. The scavenging domestic pig in this mode of living in which polished stone axe and hand-made pottery developed in course of time, marks the settled life and transformation of the tribal institutions into the rural ones. From here begins the Formative stage after the end of the Archaic one. It is in this form that this mode of living spread as far west as Europe by way of the land, and Madagascar by the sea, where the majority of the Austric-speaking tribes pursue the wet-paddy farming.

290-I. According to C. O. Sauer who has pioneered the location of a second Old World farming cradle in Southeast Asia {49, 184, 275-I}, in all probability the seat of the origin of the the wet-paddy was situated in the humid tropics, on the river-banks and coasts of southern Asia around the Bay of Bengal. Sauer looks for the progenitors in a sedentary fishing folk, with water communications, who, in addition, hunted and collected waterside plants [*Agricultural Origins & Dispersals*, NY, 1952, pp. 110; Herman von Wissmann 'Die Entwicklungsräume des Menschen', *Universitas*, I, 1946, pp. 313-31; II, 1946, pp. 445-64; E. Werth, *Grabstock, Hacke und Pflug*, Ludwigsburg, 1954; G. Smolla, *Bemerkungen zur Frage nach der Herausbildung neolithischer Kulturerscheinungen*, 1955]. "The lack of archaeological proof for these earliest planter tribes", states G. Smolla as quoted by H. von Wissmann [*MRFE*, p. 283-4], "does not, therefore, speak against their former existence....The beginnings of this early science of planting may then be assumed to have been approximately at the time of the last culmination of the last glacial period, parallel to the western European Magdalenian (c. 13,000-9,000 BC). The spread of these cultural phenomena, which developed from this region over vast areas, must, therefore, have taken place shortly before and during the postglacial Thermal Maximum, above all, in the seventh to fifth milleniums BC. This spread must have been particularly swift among the coastal fishermen and mussel-gatherers".

291-I. We have surveyed the chief elements of the mechanics of the human process in the Indo-Pacific realm down to the beginnings of the transformation of the tribal into the

rural institutions following a tripartite evolution of the pointed stick that bifurcated into the devices of winning subsistence through a ' predatory economy ' of hunting-fishing of coastal and inland or interior character and a ' productive economy ' of gathering-farming (dairying was added to it later by the Western community which had pioneered the herding : the Eastern community, though domesticated the dog, the pig, the fowl, etc., could not develop herding). These are the two manifestations of the hunting stage :-

A – Predatory Economy, based on the evolution of missiles.

1 – The Coastal : the pointed stick⟶ spear⟶ harpoon⟶ double-barbed harpoon. The first villages of the mankind arose on the sea-coast on this basis. The dug-out canoe developed into the double, the outrigger-canoe, the ocean-going balsa-craft, in order to encounter various challenges posed by the coastal fishing. The development of navigation was an additional boon that the coastal-fishing bestowed upon man in the Indo-Pacific realm. This is the mystery which lies behind an early global distribution of the shell mounds bearing the relics of mankind's earliest rural institution.

2 – The Inland : the pointed stick⟶ spear⟶ spear-thrower⟶ blow-gun⟶ bow, in the interior for hunting, in which the life was essentially nomadic and tribal institutions persisted.

Both the systems maintained the pointed stick as the digging-stick for the activities of ' gathering ' roots and fruits by the woman { 12, 15-1 }.

B – Productive Economy, based on a collateral evolution of the pointed stick toward food-production through pointed stick⟶ digging-stick⟶ dibble⟶ hoe. The dibble marks the preponderance of the Productive on the Predatory economy, and the life became semi-nomadic : and when the hoe appeared the living became more sedentary, or semi-sedentary, in the sense that the settlements had to be shifted to a nearly spot in the wake of soil-exhaustion and communities thus went on moving onwards slowly and slowly covering a distance of hundreds and hundreds of miles in the course of time. First, the millets were grown under horticulture after a phase of root-planting and fruit-growing was passed, in which the dibble and hoe were employed according to circumstances or traditions. These grains can be farmed irrespective of the hydrological and pedological factors that restrict the cultivation of rice and wheat { 21, 27, 50-1 }. In the valley bottoms, the streams and swamps in a humid Southeast Asia, that support swarms of mosquitoes and other unfavourable factors do not normally encourage the millet-growing. Further, the horticulture requires jungle-growth for burning them for fertilizing the soil, hence the inland hunters who gradually changed into farmers, prefer intramontane plateaus or gentle slopes for pursuance of their economic activities for the cultivation of small grains. The Southeast Asian horticulturists may well have spread from a base still to be located, burning forest after forest and clearing ground with the polished stone axe along the continental hills as far north as the Hwang-Ho (Yellow River) valley and the Tarim Basin, as far west as the tip of the Indian Peninsula, Central Europe, and the Abbysinian highlands in the course of centuries and millenia. We have already noticed the presence of alien primitive cultivators in these lands { Poech, Hells, MRFE, pp. 284-5:85-1 }.

Vavilov's location of the original centres of millet-growing in China { 19-1, 1 } and Abyssinia { 19-1, 6 } is not in harmony with these postulations. There are many varieties

of small grains, besides millets, that are native to Southeast Asia, the Peninsular India {41-I}, and other regions. Vavilov's thesis can be met by supposing that the millet-growing was a backwash of the Southeast Asian horticulture of native small grains, reflected from a Chinese and an Abbysinian center, but it receives no support from ethnology. However, the problem remains still unsolved. Archaeology remains still to come into the picture in this respect.

292-I. The coastal fishermen-villagers also practised gathering {212-I}. Naturally, they did not lag behind and their women, too, probably from a stimulus from the inland developments, began to pursue horticulture. The rice-plant needs plenty of water {21-I} and therefore fares well in the flood-plains of the rivers and marshes in the valley-bottoms frequented by the canoes of the coastal fishermen for collecting various forest products {247-I}. It is thus likely that the wet-paddy or the *sawah* was pioneered by the coastal fishermen {291-I} in some such a manner.

The above inferences lead us to visualize the progression of the wet-paddy into the Gangetic valley from the river mouth or the delta towards the source. The presence of the wet-paddy in the upper Gangetic Doab during the later centuries of the second millenium BC must therefore have had a long history behind in order to cover a distance of about a thousand miles. We have taken note of some Indian castes which seem to have originally been various fishing tribes {85-I}. That the fish supplements the rice diet all over Southeast and Eastern Asia is a fact that lends further support to the hypothesis that the wet-paddy must have been developed by the fishing peoples. A listing of shell mounds together with archaeological excavations on the Indian coast, particularly along the Bay of Bengal and associated raised beaches {56-I}, is likely to shed further light on the subject (The shell mounds have still to receive the attention of the Indian archaeology).

293-I. We have discussed the devices which the Archaic man evolved in order to supplement his *per capita* energy in his pursuits as an answer to his structural deficiencies. But this was sufficient to a limit only. Beyond this more *per capita* energy was required in order to work with the devices ranging from the spear to the simple bow. He overcame the odds by organizing individuals collectively into various groups above the biological family level, from the extended family onwards. But this sort of energy-organization is indeed as expensive as it is remunerative for hunting crafts, because, the participants receive the share of the game. The organizer thereby does not earn sufficient enough for him to have more leisurely time for other pursuits than he used to get previously. The domestication of the dog certainly gave a fillip, for the dog did not claim an equal share in the hunt. The difference provided some leisure to the 'man the thinker', that led to some elaboration of institutions in some of which the dog appears as the faithful companion escorting man's soul safely to the Other World. This gave rise to the canis cult centred upon the dog sacrifice in some communities. In the gathering the dog proved of no avail, nor could it help the farming ways in any manner. In the food-producing economy of the Eastern farming region the dog has no productive role. The animal has, however, carved out a place for itself as a means of protection and as a pet among the farming groups. In the horticultural operations the human labour of a family suffices for a normal size plot. In the upland paddy practised on hill-sides the dimensions and the contours of plots do not permit the movement of a plow. The bare human labour fared well with the operations involved in the Eastern farming system or horticulture and this system therefore had no occasion to find out ways and means to

supplement the human labour. Hence the absence of the animal-domestication in the productive economy of the Eastern farming community. When the plow was introduced at a later age in the region under a stimulas from the Western farming community, the women or servants were yoked to it, as the dog or the pig were of no help and the buffalo was a cult-animal merely to be sacrificed in religious rites connected, more particularly, with the cult of the mother-goddess.

294-I. The conditions obtaining in the humid tropics did not appreciably disturb the human environments to the extent of enforcing upon the inhabitants major technoeconomic adaptations, in contrast to what had happened in the Afrasian subtropics, except during the Thermal Maximum (c. 5500-2500 BC), a major dry spell during the Neothermal passed so far. The general desiccation {8-I} has though proceeded in Australia and America, the Southeast Asia has remained largely immune to its action. However, it was strong enough to have exercised some adverse influence on the hydrography and flora of the upper Burma and the Shan Plateau. In the Indo-Pacific realm therefore the pre-Industrial human economy seems to have achieved its fulfilment with the establishment of the horticultural technology having an equipment consisting essentially of the dibble, the bow, the canoe, and the celt for economic pursuits; the kāwod or the shoulder-pole for transport in a predominately hilly terrain which would not facilitate the movement of the wheeled vehicles; a gabled farmstead; the dog to guard, the pig to scavenge, and the buffallow and fowls to be sacrificed in a religion based on ancestor-worship, goddess-cult, and a fertility cult of phallic emblems developed in the new food-producing level; the gourd or bamboo cointainers; and the basketry that later led to the manufacture of the coiled-pottery.[31]

295-I. The following is a list of various distinctive traits that the Old World Eastern community developed in the Indo-Pacific realm in the course ages, in contrast to those ones which were developed by the Old World Western community of the Indo-Atlantic realm:-

The Old World Eastern Community : —

A. *Economy*—(1) Rice-cultivation through horticulture in the form of hill-paddy, wet-paddy, etc. : (2) Terrace-cultivation : (3) Ritualized cultivation of roots : (4) Fishing prominent : (5) No dairying : (6) Shell money.

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31 – *Homo faber*, or 'man the maker' can seldom resist the appeal of the plastic clay. The need for plastering the surface of the baskets to check the leakage is understood to have given birth to the pottery making. The clay vessels began later to be manufactured independent on the lines o' coil basketry and thus arose the coiled pottery, which is so typical of the primitive peoples of Southeast Asia and the Americas. The Nicobaris (Austric-speaking) still make hand-made pottery [IG, XIX, p. 79]. The Bushmen, too, manufactured pottery. In the Eastern basic community the clay vessels were modelled after the shapes of the gourd-containers of more or less spheroid forms having no handles. The wheel-thrown pottery of the eastern and the Peninsular India, too, follows this pattern, a fact that suggests a Southeast Asian base of the potter's craft in the extra-Indus basin parts of India. On account of its fragility, the pottery is not favoured by the nomadic hunting and pastoral peoples. The pottery, indeed, symbolises the settled mode of life. It occurs at the end of the Archaic in the Southeast Asia and America.

B. *Science and Technology*—(1) Bamboo, shell and bone as hard raw materials : (2) Polished stone axe : (3) Shouldered hoe : (4) Rectangular adze : (5) Harpoon : (6) Terrace-irrigation : (7) Hand-made pottery : (8) Spear-thrower : (9) Blow-gun : (10) Boomerang : (11) Bow and feathered arrow : (12) Hollowed-out canoe : (13) Outrigger : (14) Skill in navigation : (15) Bark-cloth : (16) Containers of gourds and bamboo : (17) No wheel : (18) No plough : (19) The pig, buffalo and fowls domesticated for ritual sacrifices : (20) Metallurgy of iron, and rudimentary use of other metals : (21) Palanqin : (22) *Kāwad* : (23) Communicating by drum beats : (24) Domestication of elephant for transport at a later stage : (25) Mat-work and basketry : (26) Tie-dying : (27) Hammock : (28) counting in terms of 20 or in *kodis*.

C. *Settlement Pattern and Habitations* : — (1) 'Dispersed' settlement : (2) Pile-dwellings : (3) Tree-houses : (4) Community 'long houses' : (5) Gabled houses with thatched roofs :

D. *Society* — (1) Matriarchy : (2) Secret societies : (3) Female shamanism : (4) Batchelors' hall : (5) Exogamy : (6) Female rulers : (7) Democracy dominant.

E. *Religion* — (1) Soul-matter as crop-fertilizer : (2) Totemism and taboo : (3) Mana : (4) The pig as the moon : (5) Female deities : (6) Animism : (7) Ancestor-worship : (8) Family cults : (9) Prayer houses : (10) Location of shrines on high places : (11) Urn and shelf burials : (12) Megaliths and menhirs : (13) Phallic cult and gods of soil : (14) Bird, snake and crocodile worship : (15) Mythology imbued with a cosmological dualism of mountain versus sea, winged beings *versus* water beings, men of the mountains *versus* men of the sea-coast : (16) Mythology of the journey of the soul by a boat to the land of the dead : (17) Myth of the great Cosmic Serpant : (18) Myth of the immolated maiden and the fire-goddess : (19) Skull-cult : (20) Spirit-posts and huts : (21) Practices later leading to Tantricism : (22) Horned deities rare : (23) Cremation and water-burial.

F. *Art and Personal Ornaments* : — (1) Highly conventionalized sculpture and painting : (2) (2) Dancing with mask on : (3) Tatooing : (4) Drums made of split logs : (5) Lungi : (6) Pierced ear-lobes : (7) Nose-rings : (8) Teeth-filing : (9) Blackened teeth : (10) Betel leaves and nuts : (11) Body-painting : (12) Musical instruments of a distinctive type, etc.

The Old World Western Community : —

AA. *Economy* : — (1) Plow and hydraulic agriculture for the crops of wheat and barley : (2) Dairying : (3) Flood plain cultivation : (4) Domestication of sheep, goats, cattle, horse,[52] donkey, camel, etc., for dairying, transport and as farm-animals.

BB. *Science and Technology* : — (1) 'Blade' stone tools later diminishing in size into microblades or microliths that persisted in places together with copper and its alloy bronze[53] : (2) Brick : (3) Metallurgy of copper : (4) Animal transport : (5) Wheeled vehicles : (6) Wheel-made painted pottery : (7) Writing : (8) mathematics : (9) Lapidary work.

CC. *Settlement Pattern and Habitations* : — (1) Box-type houses : (2) Nucleated settlements often fortified : (3) Separate chief's castles in or near the settlements.

52 – The horse is the animal exclusively connected with the Indo-European peoples.

53 – This happened mainly in India on account of the paucity of copper in relation to the heavy demand for metal tools during the Copper-Bronze Age.

DD. Society : — (1) Patriarchy : (2) Stratified community : (3) Aristocracy : (4) Army : (5) Imperialism.

EE. Religion : — (1) Male deities : (2) Temple-oriented institutions : (3) Priestcraft : (4) Bull-sacrifice, horse-sacrifice among the Indo-Europeans : (5) Worship of nature power : (6) Thunder, rain and sky gods : (7) Solar and fire cults : (8) Solar symbols like the Sun-hawk : (9) the Swastika : (10) The Flood Legends : (11) Elaborate and richly stocked tombs for chiefs and priests.

296–I. Though a limit was imposed on production by upland horticultural techniques, its followers in hills, still maintaining some hunting because of the tradition, enjoyed far more leisure than was available in the advanced hunting, with the aid of the bow, the dog, the traps and tricks. Consequently, the instinctive urges { 58, I, 3 } among these people had under the productive economy ample oppotunities for their expression, and institutions thereby began to be elaborated further and futher. But this mode of living could not develop the institutions above the tribal level, because the habitations were still mobile, though much more slowly than was the case in the predominately hunting stage, and economic self sufficiency that the new economy imparted, did not promote closer communications among tribes. These factors confined the opportunities for development to a limited extent, with the result that a large number of these tribes have continued basically in the same horizon down to this age, having remained so much separated on tribal level from their neighbours that the largest number of the languages in the world is found among these Austric, Tibeto-Chinese and American Indian language-speaking upland horticulturists of both the Old and the New World (American, 1220; Austric, 430; Tibeto-Chinese, 115; as against the Bantu, 83; Hamito-Semitic, 46; the Indo-European found all over the world, 132. Gray, L. H., *Foundations of Language*, NY, 1939, p. 418). In India the largest number of the hill tribes speak Austric, and Tibeto-Burman and a small number of them speak Indo-Aryan (Bhili and Pahaṛi dialects) and Dravidian languages. They mostly belong to the upland horticultural horizon of the productive economy { Fn. 5–I }. How they came in the contact of the Indo-Aryan pastoral tribes and how a crossing between them occurred has already been pointed out { 123–I }.

THE SURPLUS YIELDS UNDER THE MILPA AND THE SAWAH AND HOW THE ISSUE OF THEIR DISPOSAL LEADS TO THE URBAN DEVELOPMENT

297–I. The coastal fishermen-horticulturists were the earliest people in the world to have founded villages even before they developed or adopted horticulture { 212, 274, I }. More we shall be speaking of them as occasions arrive. The scarcity of potable water on the sea-coast and other factors may well have prompted some of the coastal fishermen-horticulturists to shift inland along the river courses, where they would have probably developed the wet-paddy farming sawah yielding about thrice the quantity of rice in comparison to that available from the upland horticulture. This was the greatest advantage of the sawah over the ladang-milpa farming system. The fish, water-plants, etc., available at hand in the rivers and pools was an additional advantage. The wet-paddy therefore provided far more opportunities for leisure and close communications with other tribes with the aid of the water-transport which was a part and parcel of their supplementary fishing economy, than the upland horticulture could offer. These people had already developed rural institutions and the wet-paddy food-surpluses must have opened up doors for a super-rural material

development or civilization. How this stage would have been achieved in the Old World, for the New World could not progress above the ladang-milpa (food) technology which was a form of the dibble-culture {281-I}, we have yet no sufficient information. Since it is a fact that the wet-paddy yields far more food than the producing community needs to feed itself and over and above that the fish, water-plants, etc. are available in nature, a community of this level of the producing economy has to face the issue of the disposal of food surpluses. No community would like normally to destroy or donate them. The rise of whole time non-producing groups serving the community in many other ways, becomes an inevitable corollary. But the issue arises as to with what work to keep engaged these new groups. Communal merry-making with dance, dress, drinks and dishes; propitiating the spirits of ancestors and gods for well-being; warfare., etc., are the urges that first appeal man for their expression, before other instinctive urges find their opportunities. Though the ladang-milpa system stands on a lower level than that represented by the wet-paddy sawah in respect of surplus food production; the former, however stands on a par, when it is applied to the production of maize {201-I}. We know that the American Indians could develop urban civilization on the basis of this farming technique, which has failed in this respect when rice was cultivated under it in the Indo-Pacific realm, where it has remained restricted to merely a subsistence economy. This difference is, indeed, noteworthy here in view of subsequent developments in the two Worlds, which we are going to discuss in the pages to follow.

298-I. "In the Nucleer American zone {202-I}," writes G. R. Willey, "the maize plant, genetically developed and economically successful, became the vital element in a village-farming way of life that subsequently spread as a complex ....this complex developed in southern Middle America and from there spread northward to Mexico and southward as far as Peru. This was its primary diffusion. Afterward, there were secondary diffusions to other parts of the Americas ....responsible for the establishment of similar communities in southwestern North America, the southern Andes, lowland tropical South America, and the eastern woodlands of North America...This florescence {c. 1st millenium BC} rests upon a chronologically deep series of Archaic food-collecting cultures which were at least semisedentary, and it contains elements, such as pottery, which are probably of Asiatic derivation....Settled villages developed on the northwest coast of North America {197, 212-I} and interior valley of California, with population supported by the intensive food-collecting economy of the coast and rivers. It is significant, however, that in neither of these areas did aboriginal cultivation ever make much headway....In Nuclear America the town and eventually the city had beginnings in the settled farming village. A centralizing factor in this development was undoubtedly the temple. This earliest form of permanent structure usually had a flat topped pyramidal mound of earth or rock as a base....At first, the importance of such a mound, and the temple that stood on it, was probably limited to the immediate village. Sometimes these villages were small, concentrated clusters of dwellings; in other instances the settlement pattern was a dispersed one, at varying distances from the temple center. Later on, the temple, or temple and palace structures, became the focal point of what might be called a town. In Nuclear America the towns, like the antecedent villages, were either concentrated or dispersed. The former pattern developed in parts of Middle America, such as the valley of Mexico or the Guatemalan Highlands, and in Peru; the latter was characteristic of the Veracruz-Tabasco lowlands or the Peten-Yucatan jungles of Middle America. In the towns the temple or ceremonial precinct was devoted to religious and governmental matters and to the housing of priests and of rulers and their retainers.

The surrounding settlement zone, either scattered or concentrated, grew with increase in the numbers of farmers, artisans, or both. Trade was an important function of these towns. In Nuclear America the town-and-temple community dates back to 800 BC....the Adena-Hopewell ceremonial mounds and earthworks, built between 800 BC and AD 200, are of impressive size. Although the mounds of Middle America were usually temple platforms while the Adena-Hopewell tumili were mounds heaped up to cover tombs { like the Buddhist stupas } and sacred buildings. In Nuclear America the city developed from the town and temple....Size is, assuredly, one criterion, but not the only one. These cities were nerve-centers of civilizations. They were distinguished by great public buildings and the arts. Formal pantheons of deities were worshipped in the temples under the tutelage of organized priesthoods. Populations were divided into social classes. Trade, in both raw materials and luxury items, was carried on in these cities, and science and writing were under the patronage of the leaders....Cities in the New World seem to have been of two types....The dispersed city with its ceremonial center and outlying hamlets, appears to have been orthogenetic in its traditions. The great lowland Mayan centers of the Classic period { AD 325-925 }, such as Tikal or Palenque, are representative. The concentrated city adheres more to the concept of the city in the western European definition of the term. It was truly urban agglomeration. Its traditions were heterogenetic. Peruvian Chanchan Aztec Tenochtitlan, and probably the more ancient Mexican city of Teotihuacan represent the type....In the outlands beyond Nuclear America, trade and influences from the cities followed old routes of contact....In the south Andes there was very direct impact of the Inca state " [*New World Prehistory*, Washington, 1961, pp. 568-70].

In view of the above, the sawah-practising fishermen-horticulturists of the Old World Eastern region, must have also developed super-rural institutions in order to dispose of the food-surpluses.

299-I. We have earlier interpreted the transition from ruralism to urbanism as the Fall of Adam from Paradise { 3-I }. But that holds good for the Western farming community of Africa, Europe, Western Asia, the Indus Valley, and South India, that, in contrast to its Eastern counterpart in the rest of Asia, Oceania, as well as in America, has passed through a nomadic pastoral stage which has persisted to our own times. The farmer and the herder, i. e., Cain and Abel { 70-I } or the *fallah* and the *badawi*, have incessantly been warring with each other and from this conflict has arisen the great parasiting institution of the Oriental Despotism, the element which joining hands with the shamanism or priesthood, introduced monumentalism resting on parasitism in the course of the Urban Revolution (it was a 'development' in the Americas). This element later penetrated into even the Indo-Pacific and the American Indian urban scene where it appears with the presence of the *castillo* and the *palacio*. All the great monuments comprising the palaces and tombs all over the globe were constructed by this element for its own selfish ends at the cost of labour and surplus food produced by the community. The human process could not move further smoothly and properly since the rise of the Oriental Despotism. The Democratic Revolution which we are witnessing in this century is indeed a revolt against the Oriental Despotism.[34]

34 – 'The harshest form of total power' [Wittfogel, K. A., *Oriental Despotism*, Yale Univ., 1957, p. 1]. But the institution has so deeply permeated the human nature in

[Cont. on next page]

THE LOWER GANGETIC VALLEY AND THE CRADLE OF THE WET-PADDY OR THE AMAN FARMING

300-I. The next question that poses itself in its turn is the location of the transition from the coastal fishing-cum-horticulture to the wet-paddy *sawah*. The event was indeed important, for the latter technique was destined to continue to our own times. We have already recorded the fact that the wild species of rice, *oryza fatua*, from which the cultivated varieties have been developed, are found in moist places in the southwest and the eastern Himalayas, the latter occupying the northern parts of Bengal and Assam { 19-I, 2; 22, I, 3 }. So, the people who pioneered the wet-paddy cultivation must have come to these or one of these two Himalayan areas. In view of the fact: (1) that in the eastern India comprising Bengal, Assam, Orissa and Bihar, together with some adjacent areas, the food of rice is fundamentally associated with that of fish; (2) that a large number of indigenous wet-paddy (*aman*) cultivating peoples in Bengal pursue also fishing and boating, for instance, the Bagdis, the Bauris, the Binds, the Doais, the Ghasis, the Gonhris, the Kadars, the Namaśudras or Chandals, the Patnis, the Pods, etc. [Mitra, A., *The Tribes & Castes of West Bengal*, Alipore, 1953, pp. 70-6]; and (3) that a traditional conch-shell industry still survives in Bengal [Hornel, J., 'The Chank Bangle Industry' Calcutta *MemASBengal*, I, VI, 1910-14 : Mitra, A., *The tribes & Castes of West Bengal*, Alipore, 1953, pp. 34], it appears highly probable that the wet-paddy was pioneered by a coastal fishing community. The occurrence of shell mounds in the Andamans and on the mainland coast near Cuttack { 276-I } suggests the existence of a coastal fishing community in the islands of the Bay of Bengal and a part of the east coast of India in a former age, the antiquity of which we do not yet know as these shell mounds have not been excavated so far. However, as these mounds belong to the Mesolithic and the early Neolithic ages in Europe and to that of Archaic in America, their Indian counter part may also be held tentatively to be protohistoric in antiquity. We have earlier noticed in the light of historical linguistics that the cultivation of rice in India belonged originally to a pre-Indo-Aryan Austric-speaking people residing in the Gangetic valley { 106, 169-I, }. The presence of an Austric-speaking hunting-fishing community in the Nicobar (Nakkawār) Islands lying south of the Andamans in the Bay of Bengal is highly suggestive in this context. The Nicobaris belong to a stage higher than that of the Andaman Islanders { 248, 276-I }, for they possess both the bow and the dog, whereas the latter lack the dog. The Nicobaris therefore belong to a horizon equivalent to that of the American Archaic which in the coastal areas is characterized by the shell mounds { 199, I, 2, 279-I }. All these facts taken combined lead us to a surmise that an Austric-speaking coastal-fishing community of an Archaic (= Archaic Hoabinhian ?) horizon entered the Gangetic Delta by

various degrees all over the world in the course of centuries that it readily begins to express itself in the most cases through various elements of modern democracy and the result is that the democracy is now defeating itself on this account. It follows therefore that so long as the mankind of our age is not able to eradicate this element of the Oriental Despotism from its nature through some means, the democracy would hardly yield its fruits, because, an average individual tends under a pressure of the instinctive urge for dominating others { 58-I, 3 } parasitically, more and more towards his own selfish ends and that too for 'perpetuity', if possible, and vicious circle of a conflict between the community and selfish ends is more likely to go on indefinitely adding more and more to the woes and miseries of the mankind.

the way of the Bay of Bengal, of which the Nicobaris form a relic which has survived essentially in the state that approximates to the original one in which they had migrated from a Southeast Asian base. We find two types of archaeological relics in the Andamans: the shell mounds about which we have already spoken earlier [276-I], and a lithic industry [Haughton, J. C. 'Flint Implements from the Andamans', *PASBeng*, XXXII, 1863, pp. 306-7]. If Southeast Asian, Australian, and American analogies are applicable here, we may hazard a guess that the latter industry should belong to the ancestors of the Andamanes people, in view of their present technoecomic level; and the shell mounds to the ancestors of the Nicobaris, for they must have lived for some time also in the intermediate Andamans while moving gradually from the Nicobars to the Indian mainland onwards. Besides this, hardly anything more can be stated in the present state of our knowledge.

301-I. Stretching northward from the head of its Bay for about 350 miles right into the eastern Himalayas, the physiographic terrain of Bengal, the ancient Vanga, a name of the Austric origin [Lévi, Sylvain, 'Pre-Aryan & Pre-Dravidian in India', *PA&PD*, tr., Bagchi, P. C., Calcutta, 1929, pp. 72-4] that first occurs in the Vedic literature in the *Aitareya-āraṇyaka*, II, i, I of c. 800 BC, is mainly occupied by the Gangetic delta, one of the largest geographical entity of its class, if not the largest, in the world, with an area of about 82,000 sq. mls [Spate, O. H. K. *I&P*, p. 522]. We have already noticed [40-I] that the Mid-Indian Orographic Complex of the Peninsular India had during earlier geological ages extended right into the heart of Assam in the form of the Shillong Plateau comprising the Archaean Garo, Khasi and Jaintia Hills. Bengal owes its origin to the subsidence of this great mountain system between the Garo and the Rajmahal hills, a distance of about 140 miles between Mahendraganj in Assam and the Rajmahal town in Bengal, through a process of fracturing. The Garo-Rajmahal Gap, "appears to have been covered," writes S. L. Hora, "by the sea from the Jurassic or Cretaceous onwards and to have experienced the effects of the Tertiary movements of the Himalayan and Burmese area in that it was uplifted in the Miocene....Minor oscillations have occurred even in the Pliocene and Pleistocene times, and these movements may have accentuated the original faults and made the Gap more pronounced while it was still covered by the sea. It would appear that structurally the Gap is a very old feature of the topography of India, though ecologically it became suitable for the migration of freshwater fishes during the glacial epochs of the Pleistocene Ice Age. Its present-day physical features seem to have been attained maturity after dismemberment of the Indobrahma River when the Ganga and the Brahmaputra began to flow through it" [Hora, S. L., 'Tectonic History of India & its bearing on Fish Geography', *JBNHS*, LII, 4, April 1955, pp. 694-5], having originated as a result of this catastrophe at about the end of the Second (= Mindel-Kansan) Alpo-Himalayan glaciation some 4,00,000 yrs BP. The Ganga, together with the Tista (Kartoyā), the Brahmaputra and the Surma-Meghna from Assam and the hills of Cāchār, respectively, in the east; and the More, the Ajay, the Damodar, the Rūpnārāyan and the Kasai from the Chhota Nagpur Plateau in the west, has since been depositing its various alluvia into the Bay of Bengal, which in the previous ages waved over the entire surface now occupied by the delta. Three main terraces of the alluvia have so far been recognized. Three relics of the highest identifiable terrace constituted of a detrital or low-level laterite that appears to be a continuation of the coastal laterite of South India, border the subsequent deposits in three directions, i.e., the Lalmai tract at the fringe of the Peninsular Chhota Nagpur Plateau in the west; the Bārendra Doab in the north lying in the Ganga-Brahmaputra fork (below the confluence between the Brahmaputra and the

Tista or the ancient Karotayā which flowed into the Ganga as late as 1787 : the Brahmaputra is called the Jamuna in Bengal); and the Madhupur Jungle to the Southeast of Barendra to the east of which the Brahmaputra ran independently into the sea as late as the early decades of the 19th century [Majumdar, S. C., *op. cit.*, pp. 62–4]. The palaeoliths belonging to the Core tradition { 4–I } have been found on the surface of this terrace and the areas adjacent to Lalmai [Ball, V., 'On Stone Implements found in Bengal', *PSABeng*, 1865, pp. 127–8, 'Note on Stone Implements found in Bengal', *ibid*, 1867, p. 143; etc. ; Dani, A. H. *Prehistory & Protohistory of Eastern India*, Cal, 1960, pp. 18–9] and embedded in the Upper Boulder bed of the Burhabalanga section in the Mayurbhanj Plain [Bose, N. K., Sen, D. & Ray, G. S., 'Climatic Changes during the Stone Age in Mayurbhanj', *Geographical Review of India*, XIII, 1, 1951, pp. 1–8] that overlies a detrital laterite (= Low-Level Laterite of South India) which appears to be approximately identical with the formation represented by the Lalmai–Barendra–Madhupur terrace. In view of the typology of these tools the related horizons should not antedate the great Interglacial. We have already noticed that the Indobrahma was dismembered into the Brahmaputra, the Ganga { 6–I } and the Indus at the end of the Second Glaciation that gave rise to the Great Interglacial (Mindel–Riss) as becomes evident from the disturbances in which the uppermost Siwaliks represented by the Boulder Conglomerate composed of the sediments spread in its velley by this great prehistoric Indian river, was involved. These disturbances resulting into the upheaval of the bed of the Indobrahma into the Himalayan foothills, the Siwalik range, must have caused the final and complete subsidence of the Garo–Rajmahal portion of the Mid–Indian mountain complex { 85–I } to the extent of permitting the new rivers the Ganga and Brahmaputra to fall into the Bay of Bengal of those early times. This seems to have occurred in the presence of the Palaeolithic man possessing the Core tradition of lithic technology flourishing on the western margins of the Mid–Pleistocene Bengal. The history of this momentous palaeolithic development lies concealed probably under the subsequent Gangetic deposits, on its surface or in the overlying gravels of this earliest deltaic relief, which, according to Addams–Williams, may also belong to a pre–Gangetic phase of the geomorphology of Bengal. "It appears that", observes Addams–Williams, "this delta was laid down by the rivers issuing from the north { i. e., from the southern flanks of the Archaean hills that had occupied the Garo–Rajmahal Gap during the pre–Gangetic times to the north of which appears to had been flowing the Indobrahma. Its latest deposits, the Boulder Conglomerate, too, have yielded a palaeolithic industry comprising what are known as the Pre–Soan flakes—author } or north–east, and that presumably had not then become a factor in the case. The old delta was depressed and the Ganges appear to have then entered on the scene and began forming the new delta on the top of the old from the neighbourhood of Rajmahal" [*History of the Rivers in the Gangetic Delta*, quoted by S. C. Majumdar, *op. cit.*, pp. 39–40 ; 'Fort William Bore–Hole' *MGI* & 8–*I*, p. 432–4.

302–I. The next geomorphological division of the deltaic Bengal, which certainly owes its origin to the Gangetic sedimentation having been composed mainly of the *ghutin* (nodules of calcium carbonate or *kankar*)–bearing *bhangar* (older alluvium typical of the Gangetic valley that forms a higher terrace along the river in northern India), lies between the Lalmai uplands and the Gorai–Madhumati river–course. It is traversed in the middle by the Bhāgirathi–Hooghly, the ancient main channel of the Ganga before its place was finally taken over by the Padmāvati or the Padmā during the middle of the 16th century [*IG*, VII, p. 198, Majumdar, S. C., *op. cit.*, pp. 68–75]. That this was the ancient main channel of the Ganga is attested by the fact that all the places of pilgrimage where the river is held sacred

in Bengal, viz. Nabadwip, Katwā, Tribeni (the Jamunā and the Sarasvati that meet the Ganga at Triveni Sangam near Allahabad are held in the Hindu religion to be separating here), Kālighāt in Calcutta, and lastly Gangāsāgar are located on the Bhagirathi-Hooghly. The area lying to its west was called Rāḍh (Prakrit, Lāḍa) in ancient times and the area that stretches to its east is known traditionally as Bāgḍi {compare, Bāgaḍ=desert area along the bed of the Sarasvati or Nāli in the Bikaner area; Vāgaḍ=forest area in southern Rajasthan comprising mainly the districts of Dungarpur and Bānswāra; Vāgaḍ=eastern portion of Kutch or Kachchha inhabited still mainly by the Āyars, Ahirs or the ancient Ābhira pastoral peoples 146-I}. In the east of the Gorai-Madhumati course lies Banga or ancient Vanga, which is composed of the *khadar* or the newer alluvium of the Gangetic valley and is still in the process of formation. The direction of the deposition follows a SW⟶NE line and the 25' contour seems to demarcate it from the Radh-Bagdi tract.

303-I. The Radh-Bagdi tract lying along the Bhagirathi-Hooghly appears to be the nuclear Bengal for the purpose of history. According to a story found in the Ceylonese Buddhist chronicle the *Mahāvamśa*, II, 5, the southern part of Gujarat on the West Coast that was known as Lāṭa (Prakrit, lāḍa; a subcaste of the Hindu trading class in Gujarat and Maharashtra is still known as the Lāḍ Vāṇia) in ancient times had received the name after that of Rāḍh in Bengal. In Sind its lower part where the standard Sindhi language, the Lāri, is spoken is called Lāru. Similarly, a part of Iran is still known as Lāristan. One of the primitive fishing-cultivating people of Bengal are the Bagdis, who have preserved a number such traits as may be assigned for their origin to a non-Indo-Aryan source. The Rarhi Brahmans, together with those of Barendra, regard themselves as higher than those of Banga.

Bengal does not receive the showers during the winter. The monsoon rainfall which it receives is nearly 80" in the east and the north, diminishing to 45" in the west and the south, being quite adequate for wet-paddy farming. The rivers of the Delta containing an inexhaustible supply of fish and furnishing a cheap and easy means of transport, bring down annually vast quantities of fertilizing silt, which they distribute over the surface of the land. The landscape is characterized by the groves of bamboo and mango, areca and coconut palm, pipal, tamarind and other trees. In ancient times Bengal was the home of numerous wild buffalo frequenting the dense jungles which have long since given place to cultivation. At present the tigers, leopards, deers, and wild hogs are found [*IG*, VII, pp. 193-210; *MGI&B*, pp. 444-7; Majumdar, S. C., *Rivers of the Bengal Delta*, Cal, 1942; Kanangopal, *The Ganges Delta*, Cal, 1944; Mukerjee, R. K., *The Changing Face of Bengal*, Cal, 1938].

BHAGIRATHA AND THE DECAY OF THE OLD GANGETIC DELTA

304-I. On account of the development of certain adverse physical conditions under which its drainage has decayed and over-exploitation of its agricultural fertility since time immemorial, the old Gangetic Delta or the Rādh-Bāgdi area has been relegated to a secondary position in later history and its relief is today characterized by the presence of old levees, lagoons, and abandoned river-beds forming numerous *bils* (marshy or lacustrine depressions) and connected with outside rivers by *khāls* {142-I} or drainage channels. Old rulers of Bengal are stated to have cleared up the blocked up channels and excavated canals in the area [Majumdar, S. C., *op. cit*, p. 65]. We are here reminded of a similar task by a Puranic ruler Bhagiratha, after whose name the main channel of the Ganga

in this part of its basin is recorded to have received its name the Bhagirathi. If this Puranic legend had an element of truth, Bhagiratha as the etymology of his name suggests, would have certainly been an Indo-Aryan or Indic prince both linguistically and otherwise, for, as we have noticed earlier { 108-I }, that *ratha* or war-chariot was an innovation exclusively connected during early phase of its prevalence with the Indo-European peoples { 108, 262-I A 11 }. The personal names ending with the suffix *-ratha* are well-known to us from the Indo-European aristocracy of the late Bronze Age (2nd mill BC) Middle East. Bhagiratha is recorded in the Puranas [*Vayu-p.* I, 47; II, 26 ; *Vishṇu-p.*, IV, 4, etc.] to have ruled in the Gangetic Valley some 50 reigns before the heroes of the Mahābhārata War [Pillai G. K., *THI*, p. 304]. The Great Epic also contains his legend [*Mhb*, Vana-p. C VIII]. Bhagiratha's opening of the Ganga in its delta may presuppose the blocking up of the channel of the river on account of its decay causing a crisis obviously for cultivation during a period that may have been round about 2000 BC, in view of the number of reigns passed between his time and that of the Mahabharata { c. 13-12 cent. BC, 51, 52-I }.

THE EARLIEST PRESENCE OF THE WESTERN FARMING COMMUNITY IN BENGAL

305-I. The vestiges of a settlement comprising a moderately thick (over one foot) stratum yielding an assemblage of microblades including many sickle-flints, but without pottery and animal bones, have been excavated at Birbhanpur { 76-I } near Durgapur [Lal, B. B., 'Birbhanpur, a Microlithic Site in the Damodar Valley, West Bengal', *AI.*, 14, 1958, pp. 5-48 ; Lal, B. B., & Lal, S. B., 'The Microlithic Site of Birbhanpur : A Geochronological Study', *AI*, 17, 1961, pp. 37-46], dated c. 4th millenium BC. The thickness of the layer suggests such a long range of period for settlement at a single place as could have been based mainly on food-production. The tools do not belong to a hunting stage. To the contrary, the presence of serrated blades attests the harvesting of crops with 'composite' sickles. It follows therefore that a community of the Western basic farmers, as the occurrence of the blade industry { 4, 163-I } shows, was living in a settled hamlet or village during a period probably not later than the 4th millenium BC on the western margin of Radh. The observers have not correlated the two terraces Tn-I and Tn they have recognised on the Damodar at Birbhanpur with those of the Gangetic Delta, and their account does not lead others to do so. The absence of pottery, and the tool typology lead us to postulate that the inhabitants were most probably the horticulturists comparable to those of the Pre-Pottery Neolithic of the Middle East { 80-I } belonging to a time-range of c. 7000-5500 BC. The archaeological sites characterized by the presence of microblades have been found practically all over the subcontinent with the exception of the areas covered by the Indo-Gangetic alluvia and those lying to the east of the Chhota Nagpur Plateau. A large number of sites have yielded polished stone axe, pottery mostly wheel-turned, animal bones, parallel-sided blades, shell-bangles, copper or bronze objects, etc. [Foote, R. B., *The Foote Collection of Indian Prehistoric & Protohistoric Antiquities, Catalogue Raisonne*, Madras, 1914 ; Brown, C. J., *Catalogue Raisonne of the Prehistoric Antiquities in the Indian Museum at Calcutta*, Simla, 1917 ; Pandya, A. V., 'Prehistoric Cultures discovered on the Narmada', *Proc. Indian History Congress*, 10 th Session, Bom. 1947, pp. 167-94; etc. ; Sankalia, H. D., *Prehistory & Protohistory in India & Pakistan*, Bom., 1962, pp. 125-225; etc.]. They appear to represent the Indian development of a major eastward extension of the Old World Western farming community, whose food-getting technology was based on a lithic blade industry,

emanating from a Middle Eastern base in the form of succesive waves belonging to various technoeconomic stages ranging from an aceramic (pre-pottery) semi-sedentary horticultural horizon of the time-range of c. 7000-5500 BC, to that of a pre-ferric urban florescence of c. 3500-2000 BC. It passed through two intermediate stages, viz., a ceramic neolithic of c. 5500-4500 in which the introduction of plow drawn by domestic animals ushers in the era of sedentary rural life in the Old World Western farming region, and an early chalcolithic of c. 4500-3500, developing on metallurgy of copper. Out of these, the Birbhanpur Culture seems to belong to the aceramic horticultural horizon of the Western farming region which in respect of its technoeconomic stage corresponds with the fishing-horticultural horizon of the Eastern farming region. In the Indian developmental phase of the Western farming complex, to which the above sites belong, the Birbhanpur horizon may essentially be traced through the cultures represented mainly by the Thell-dune sites of the Tirunelveli Dist., Madras [Zeuner, F. E. & Allchin, B., 'The Microlithic Sites of Tinnevelly District, Madras', AI, 12, 1656, pp. 4-20] and the loessic dune-site at Langhnaj, Mehsana Dist., Gujarat [Sankalia, H. D., 'The Microlithic Industry of Langhnaj, Gujarat', Journal of Gujarat Research Society, XVIII, 4, 1956, pp. 275-84; etc.] to a Middle Eastern-cum-North African source.

Let us here postpone the topic of the Birbhanpur Culture to a subsequent occasion when we discuss the mechanism of the diffusion-stimulus of the productive food-economy from the Eastern to the Western community.

THE EASTERN BASIC COMMUNITY REACHED THE LIMIT OF ITS TECHNOECONOMIC POTENTIAL WITH THE ACHIEVEMENT OF THE FISHING-HORTICULTURAL ECONOMY BASED ON SAWAH

306-I. The Eastern community failed to pursue the technoeconomic development next after the horticulture level, because it could not supplement the human energy from an extra-human source. The limits of the bow and the dog had already been exhausted when the peak of the inland hunting was reached and in the new economy of food production they had no role to play. The religious taboo did not allow the Eastern community to yoke the buffalo or the dog to the hoe or the dibble. The cattle and horse were native to the Western Asia, and if introduced in the Southeast Asia, they were not able to stand the challenge of humid conditions and a forest life in this new environment.

THE WESTERN BASIC COMMUNITY TOOK OVER THE FURTHUR TECHNOECONOMIC DEVELOPMENT WITH THE AID OF EXTRA-HUMAN ENERGY DERIVED FROM ANIMAL DOMESTICATION

307-I. The next stage of the development from the level of the fishing-horticulture based on wet-paddy cultivation onwards warranted extra-human energy and quite obviously it was destined to go into the hands of the Western basic community which had succeeded in the domestication of animals for economic purposes, because, the cattle was native to their habitat. The Western community, on being introduced to the productive economy at the level of millet-growing horticulture, pursued it for a number of centuries. The ideal conditions for the new economic activity were offered by light sandy soils which in many areas were assuming the form of dunes as a result of the Afrasian Desiccation. The softness

of these soils was most suited for both hoeing and dibbling which did not require much effort and the millets require just a little rainfall that may be anything above 5". The millets are still grown in Rajasthan and Baluchistan under such conditions. The domesticated animals were of little use in this technique, though they may have been quite useful for additional food supply through dairying and slaughtering. The growing scarcity of water during various early phases of the desiccation and other factors may have driven the herbivorous animals, like the sheep, goats, cattle, horse, donkey, camel, etc., into the human company and domestication of animal thus seems to have originated in the Western region[55]. How did the Eastern community tame the dog, the buffalow, etc., we do not know. Everywhere the seminomadism was involved with the horticulture on accouat of soil-exhaustion, unless it was tied to the coastal and estuarine fishing, which was not the case in the habitat of the Western farming community. The Western followers of horticulture who possessed a Mesolithic micro-blade industry, but no pottery, nor domestic animals in the beginning, in the light of archaeological excavations [Carleton, S. C., *Cave Explorations in Iran*, Philadelphia, 1951, p. 89, etc.], were spread far and wide in Western Asia, Iran, Inner Asia, India, etc., occupying mainly dunes and other eminences in the areas having light soils. The yields of millets were not high and they therefore, like the inland horticulturists of the Eastern community cultivating on hill sides, were not able to develop super-rural institutions.

308-I. The most momentous event in the development of productive economy on its having been passed from the Eastern community of Southeast Asia to the Western one of the Middle East and Inner Asia was the change from the cultivation of millets to that of barley-wheat. Vavilov locates the centers of wild barley in Abyssinia [19-I, 6], highlands of Anatolia, Armenia and western Iran [33-I]. Tibet is out of picture on account of its location away from the theatres of the early development of productive food economy. Out of Vavilov's three primary centers of the origin of wheat, it occurs in wild forms in the Near Eastern [19-I, 4] and the Mediterranean centers [19-I, 5]. In the Central Asiatic center that includes Afghanistan and northwest India [19-I, 3], this cereal is found in an hybrid form [*T. vulgare*] developed later from a crossing between those wild forms occurring in the above two centers [30, 31-I]. In view of these facts, the Western Asia seems to have been the cradle of the change from millets to barley-wheat and it gets a support from archaeology. Two-rowed hulled barley was the principal cereal found in excavations at Ali Kosh, Deh Luran, and other places. It disappeared from Iraq during the 5th millenium BC with the introduction of irrigation. The Emmer wheat has been found in the Aceramic Neolithic of Jarmo, c. 6750 BC, and in Pre-Dynastic Egypt, c. 4,000 to 3,200 BC, whereas einkorn is also encountered in the earliest level at the former site together with emmer [Helbaek, H., 'The Palaeoethnobotany of the Near East & Europe', *Prehistoric Investigations in Iraqi Kurdistan*, by Braidwood, R. J., & Howe, B., Chicago, 1960, pp. 100-11 ; Helbaek, H., 'Early Hassunan Vegetable at Es-Sawwan Near Samarra', *Sumer*, XX, 1 & 2, 1964, pp. 45-8]. In India only the hybrid T. vulgare or the common wheat or the bread wheat has been found both at Hadappā and Moenjodhero [51-I] and at Navdātoli I, [88-I] Maheshwar. Barley and wheat had thus begun to figure in the productive economy of the Middle East even during the horticultural stage. They were established firmly when the plow-cultivation had supplanted the horticulture.

55—*Cf. Man and Cattle* (a symposium on domestication), Royal Anthropological Institute, 1962 ; Zeuner, F. E., *A History of Domesticated Animals*, Lon, 1963.

309-1. As regards the development of extra-human sources of energy in the horticultural stage, we have already noticed that both the dog and the pig were of no substantial help in this respect in the upland millet-horticulture of the Eastern community. The same was the case in this stage with the Western community, which had also domesticated these animals. However, the Western horticulturists later domesticated also the goat which was native to Western Asia and occurs first both at Jarmo and Jericho during the 7th millenium BC [Reed, C. A., 'A Review of the Archaeological Evidence on Animal Domestication in the Pre-Historic Near East', *PIIK*, 1960, pp. 120, 130-4]. The goat is indeed the first domestic animal which has really helped man in his productive economy by supplying milk, though it is another thing that the animal is slaughtered for its meat, and this practice goes under predatory economy. The real contribution of the domestic animals lies in milk supply and their use as farm and transport animals in the productive economy. The goat finds out its own food in the vicinity of settlements and does not claim a share in the human food. It is thus of far more value to man than is another man as an assistant. The domestication of the goat thus became of substantial help to man in his food-getting pursuits, but this help did not go to the extent of providing its master enough leisure for him to develop super-rural institutions.

310-1. It was indeed with the domestication of the cattle attested first in archaeology in Anau II-Shah Tepe III-Sialk III-horizon in Iran and Inner Asia, and Beersheba in Israel during the 5th millenium BC, and must have been present even in the preceding millenium [Reed, C., *op. cit.* pp. 121, 141-5] that the Western horticulturists found an enormous source of extra-human energy for pursuing further their development of productive economy. The Afrasian Desiccation was posing challenges after challenges to these ancient inhabitants of the Middle East and Inner Asia as we have already seen [8, 44-1]. The cultivation of barley-wheat necessitated the furrowing of the soil in the fields and the hoe or dibble had to be pulled horizontally and thus the plow was originated. The women seem to have been doing it in the beginning [12-1]. Subsequently the bullocks were tried successfully. The device, as a matter of fact, proved to be a revolutionary innovation in the development of the productive economy ever since its inception, for four principal reasons. Firstly, the cultivator could save more human food by replacing the human beings drawing the plow with the grazing animals which could well subsist on agricultural by-products that man did not consume. This was indeed an economic advantage over the intensive manual cultivation pursued still in parts of China in which the human beings are yoked to the plow. The agriculturists could thus spare more surplus food and their purchasing power was increased. Secondly, the plowing brings from underneath to the surface fresh soil, which, if need be, can further be improved by manuring with excreta of the cattle. As a result of this, there remained no need any more to abandon the plot on account of soil-exhaustion and this put an end to semi-momadism of the horticultural stage and man thus became tied to the soil. Permanent habitations thus came into being and nucleated villages were formed in their turn. But we should not forget here that a rural development had already been achieved by the coastal fishermen earlier in the hunting stage [274-1]. But it remained restricted to few coastal communities only and inland peoples who have always formed the majority of the mankind, could not profit from it. The sedentary life gave great impetus to pottery making and it is why in archaeological records its occurrence denotes this mode of living. In the same way, if a thick layer of habitational stratum is found in the course of an archaeological excavation of an inland site other than

a cave or rock-shelter, the evidence implies that a sedentary group-life covering some generations had occupied the place and this could not normally had happened unless the economy of the group was not rooted in the agriculture. The third advantage that agriculture offered was additional food provided by dairying and slaughtering, but this advantage had already its counterpart in the Eastern community in the fishing and gathering of water-plants and other items of food. A little hunting has always been present at all the economic stages of the human life. Thus, except the availability of the extra-human energy derived from the domestic animals, the agriculture of the Western community was in no way superior technoeconomically to the wet-paddy or the ladang of the Eastern community. The fourth advantage of the agriculture practised by the Western community was that the major cereal it grew and still grows, i. e., the wheat, possesses certain special nutritive values, for instance, its carbohydrates and proteins are well balanced, so that even if people have no other food they can live on it a long time and in this respect it is much superior to rice. Over and above, its associate the milk contains far more nourishing properties than does the fish, the counterpart of the latter in the rice-eating Eastern community. The dietetic factors appear to exert in the long run an influence on the development of human nature and temperament as becomes evident from some psychodynamic observations on the behaviour of the two diverse communities as it reflects on history.

DIETETICS AND PSYCHODYNAMICS

311-1. An instance of the working of the psychodynamic factors may be quoted here. We have observed that it was mainly the ecological factor that checked the further progress of the food-getting technology in the Eastern community beyond the wet-paddy hurticultural level. But the development in the Western community of such destructive institutions as the Oriental Despotism, militarism and imperialism, all of which go to constitute the Era of Cyclical Conquests { 231-1, 5. } of the Neo-Evolutionists that represent in their opinion the climax of the Pre-Industrial human civilization, in contrast to the constructive institutions of the Eastern community, such as, a more pronounced humanitarianism and philosophizing attitude which become evident from the rise of the S'ramaṇic organizations of Jainism and Buddhism among the rice-cultivators of the middle Gangetic valley, on one hand; and the failure of the latter, on the other hand, on its introduction to the Western community organization and its persistence in the Eastern communinly, as also a more democractic outlook, can hardly be ascribed to ecological factors. An answer may therefore justifiably be sought in a correlation between dietetics and psychodynamics.

THE JĀṬS OF NORTH INDIA REPRESENT THE BEST DEVELOPMENT OF THE WESTERN COMMUNITY IN THE INDO-ATLANTIC REALM

312-1. Relatively a higher rate of increase and high concentration of population in the Gangetic Valley, Southeast Asia and other parts of the Indo-Pacific realm, as is evident from its human geography in ratio of the production of the rice and associated cereals, appear to have led the people to adhere partly to the predatory economy of fishing despite the precepts of Buddhism. The Pancha-Draviḍa division of the Brahmanas, the Indian priest class at the apex of which stands the Nāmbudiri of Kerala, who reside in Tāmilnāḍ (Madras State), Andhra Pradesh, Karṇāṭaka (Mysore State), Mahārashṭra, and Gurjara-deśa (Gujarat) do not normally dine with those belonging to the Pancha-Gauḍa division, viz. the

Sārasvatas of the Punjab and Sind; the Kānyakubjas, the Maithilas and the Gauḍas of the Gangetic valley and the Utkalas of Orissa who eat the fish and the meat. But the Jāts, a warrior-cultivators' community occupying largely the Indo-Gangetic Divide that originally was the upper and middle Sarasvati basin forming the historically strategic border between the Indo-Pacific and the Indo-Atlantic realms have indeed achieved the human symbiotic mutualism with the animal world, or speaking in our terms, have already attained the Greater Humanity-(Phase) I {242-I, IV, I}. In spite of the fact that the Dharma social organization (Hinduism) officially permits the kshatriya (warrior)-varna to take all untabooed meat diet. Other major warrior castes have still to reach fully this high status. The Jāt, the scion of the Goth in Europe, represents thus the highest development of the Western community.

"The Jat race", states General Sir George MacMunn, "are known as Jats south of the Punjab, most of the Sikh fraternity are Jats to whom the teaching of that religion especially appealed, but the race is to be found in the Punjab as Hindu Sikh and Moslem.... The Maharajah Runjhit Singh was a Jat.... It will be remembered how the Sikh Army insisted on trying their fate once more. Then was the Punjab annexed and the boy, Dhulip Singh, eventually sent to be brought up in England .... to him his friend, Col. Sleeman, the famous Indian political officer, wrote, 'I see you are going to live in Kent. You will be among your own people there, for your Jat and the men of Kent are Jats from Jutland', and no doubt he was speaking ethnological truth. How the Jats have kept up their war-like proclivities through the ages, how the Jat has been so prominent and faithful a soldier of the Crown, or how the Hindu Jat came to such great fame in the World War, for one of their battalions to receive the title of 'Royal', will be told in the course of this book" [*The Martial Races of India*. Lon. 1934, pp. 13–4].

THE ORIGIN OF THE REVOLUTIONARY PLOW-CULTIVATION IN THE WESTERN COMMUNITY AND THE INDO-ARYAN LEGEND OF PRITHI-VAINYA

313-I. Myths and legends about the momentous event of the economic history of the mankind that is the transition from the predominantly predatory hunting-gathering to the productive food technology or the rise of the Subsistence Revolution {11-5-1} are found among a number of peoples all over the world, for example, the Myth of the Great Serpent of the Papuans of New Guinea [Campbell, J., 'The Great Serpent of the Earliest Planters', *The Masks of God: Primitive Mythology*, Lon. 1960, pp. 384-91] to that of Sumé in Brazil, as well as those of Quetzalcoatl of the Mesoamerica {235-I} and Viracocha of the ancient Peruvians. But all of them are generally connected with the rise of horticulture among the peoples of the Indo-Pacific realm and America, who all shared this mode of farming in common {281-286-I}. The most momentous event of this develoment was indeed the introduction of the plow-cultivation with the aid of the extra-human industrial energy, which has essentially been forming the chief economic base of the human process since the Urban Revolution of the Bronze Age {3, 87, 231-I, 4} down to our own period of the Industrial Revolution in which the

animal-energy is gradually being replaced by mechanical energy[56] { 'mechanized agriculture', Fn 5, (5) }. The only myth connected with this revolutionary development that appears to be older in its class is the Puranic legend of Prithi-Vainya { 17-1 }.

314-1. In the Appendix 2 is given an account the "first anointed king named Prithi-Vainya ('Prithi, the son of Veṇa')." His name occurs in the *Rigveda*, VIII, 9, 10, etc., and the *Atharva-veda*, VIII, 10, 24, as well as in other works of the Vedic literature [*Ved. Ind.*p. 16]. Prithi was the son of Veṇa, the son of Anga. His subjects, who had suffered from famine, besought him for edible plants which the earth (*Gaia*, ancient Greece, go, Sanskrit, etc.) withheld. In anger he seized his bow to compel the earth to yield the usual supply. She assumed the form of cow (*go*, Sansk.) and fled before him but was unable to escape. She promised to yield the food, saying, "plough down all places level, so that I may cause my milk, the seeds of all vegetation, to flow everywhere around. The earth received its name pṛithivi, or the 'daughter of Pṛthi' after this Prithu-Vainya. Before prithu's time there were no defined boundaries of villages and towns; there was no cultivation, no pasture, no agriculture. Before his time, also the fruits and roots which constituted the food of the people were procured with great difficulty" [*Vishnu-p.* XIII, II]. This name of the earth, i. e., *pṛithivi* occurs in the Rigveda

56 – The adoption of the mechanized agriculture and transport are being emphasized in the recent trends in the economic planning in those 'under-developed countries' also which are deficient in their fossil-fuel resources. "There are immense quantities of coal in the earth," as observes Lord Boyd-Orr, "The main supplies", he states, "are in the U. S. A., which has more than half the estimated world reserves, and in Europe, the U. S. S. R. and China.....China's supply may run out within a hundred years. Optimistic estimates give the U. S. A. a thousand years' supply. The U. S. A. is also fortunate in petroleum, with a third of the known world's resources; but it is producing ⅔ th of the world's total industrial output and is already a net importer of petroleum. Even if known reserves be doubled, they will be exhausted in about 30 years, in Russia and Venezuela in about 40 years, and in the Middle East in about 100 years.....Energy from atomic fission at a cost of about 25% above power from coal is now beginning to be used. The biggest deposits of uranium are in the Congo and Canada. But according to Mezerik [*Pursuit of Plenty*, NY, 1950] at the present rate at which it is being used for bombs, no rich deposit will be left after about 30 years.....It is obvious that this great accelerating rate of increasing consumption of non-renewable sources of energy per person, together with the rate of increase of number of persons, will ultimately lead to an exhaustion of easily available sources. **If the human family does not change its way of life, the machine civilization will either blow itself up or burn itself out, to be followed by a more agrarian way of life**" ['World Resources', *The New Outline of Modern Knowledge*, ed, Pryce-Jones, Lon, 1956, pp. 588-9]. These startling revelations at a time when the hydrocarbon-based industrialization is feverishly being pursued even in the countries with meagre oil resources like the Indian sub-continent and many others, is an eye-opener for the planning bearing on the immediate destiny of their teeming millions. The future of development of the New Indian Economy lies with the hydel power and energy from the non-coking grades of the local coal supplies, and last but not least, with the domesticated animals for a number of purposes, and more so, in view of the fact that the coming century is very likely to face a crisis of the shortage of fossil-fuels all over the planet.

as the earth-goddess together with that of the sky-father in the compound *dyāvāprithivī*, [Rigveda, I, 90, 164; IV, 72; V, 84, etc.] in a context suggesting that these deities were waning in glory with the coming of Indra to the forefront. The evidence shows that Prithi, the son of Vena, if he were at all a historical personage, must have flourished some centuries before c. 1500 BC, the period when the Rigvedic hymns were composed. We have already noticed how the term ārya is associated for its origin with the plow-cultivation. The Puranic story of Prithī-Vainya reminds us again of the probable original meaning of the term *ārya*. {Fn 50}

315-I. The evidence indicates the separation of a socio-linguistic group from its parental body on its having adopted or developed the plow-cultivation. It further suggests something of more importance. A people who had adopted or developed the plow-cultivation or full agriculture {Fn 5, 4} should have normally surpassed others in the production of surplus food, and thereby an opportunity for them to develop super-rural institutions should have been more open than to those pursuing other modes of food-getting technology. The cultural development that the vocabulary and syntax of the reconstructed Indo-European language {271-I} displays warrants indeed on our part to pre-suppose that its speakers should have passed through a stage of a higher socio-economic mode of life which should have been in no way inferior to that of the Shumerians and the early Egyptians in a number of respects. The high antiquity now assignable to the Indo-European linguistic pedegree {217-I}, and fairly early movements of its speakers going to the extent of influencing linguistically the earliest American ethnic movements of c. 15,000 BP {5-I} during the last phase of the Pleistocene i. e., Würm Glaciation {4-I} and a few other factors, are likely to lead one to postulate that before we first encounter these Indo-Europeans in the archaeological records of the main theatre of the ancient human history in the Middle East by the beginning of the second millenium BC {107-115-I} as a people who had already achieved the Era of Cyclical Conquests {116-I} or the climax of the pre-Industrial human progress, should have culturally been far more advanced than having been merely a southward wave of the militarized equestrian pastoralists of the Eurasian steppes, late in the third mill. BC, as we presently think of them.

THE TERM 'ĀRYA' AND ITS SEMANTIC DEVELOPMENT FROM THE 'PLOW-CULTIVATORS' TO THE CHAMPIONS OF A 'UNIVERSAL HUMANITARIAN MOVEMENT' OF THE ANCIENT WORLD

316-I. That the term ārya stood originally for a plow-cultivator receives some support from certain references occurring in the *Atharva-veda*, XIX, 32, 8; (here in the list of four *varṇas* we find the term ārya in place of the *vaisya*) etc., and in the explanation of the phrase 'śudrāryau' of the *Taittirīya-saṃhitā* of the Black *Yajurveda*, VII, 5, 9, 3, as found in the *Kātyāyana S'rauta-sūtra*, XIII, 3, 7, etc. In the earlier portion of the *Rig-veda* comprising the *maṇḍalas* or the books II-VII, the Rigvedic people of the mid-second millenium BC in India {115, 117-I} introduce themselves as the Āryas as contrasted both religiously and morally to the Asuras [*Rig-veda*, II, 30, 4; VI, 22, 4; VII, 13, 1; VII, 99, 5, etc.], the Dāsas [*Rig-veda*, I, 51, 8; IV, 30, 21; V, 30, 5, etc.] and the Dasyus [*Rig-veda*, I, 100, 12; II, 13, 9; VI, 18, 12, etc.] We have already noticed how the Vedic Asuras are identifiable with the Assuras or the Assyrians of Subartu or the northern Iraq and Kurdistan (71, 74, 107, 109-I). According to the ancient traditional accounts preserved in the *Vāyu-purāṇa*, XL, 45-49, etc., the Dasyus and the Mlechchhas were not found in the Kuśadvīpa or the Kusa-country which appears to have been located near the

S'āka-country lying to the west of India.[57] It has been identified with a part of Irān on the basis of the tribal name, the S'akas, its inhabitants [Sircar, D. C., *SGAMI*, p. 163], and the name the 'S'aka-dvipiya' or the Maga Brāhmanās, the solar-priests hailing from the land of the S'akas who are still found in the northern and the eastern India [Wilson, J., *Indian Caste-I*, Bom, 1877, p. 438] and who had immigrated into India in company with the Sun-worshipping (the Sun-god in this form wears boots) pastoral tribes. The Dasyus and the Dāsas of the Rigveda must have therefore been peoples of India proper, some of them perhaps having later reached the southeast of the Caspian Sea as the Dahae people later recorded by the Greeks [Strabo, Geog., XI. 8. 1-8]. The Iranian cousins (Mazdāyasni) of the Vedic peoples {both had linguistically and culturally a common ancestry and spoke when they were undivided the Indo-Iranian speech also called the 'Aryan' by some philologists, 271-I} who were the followers of Ahura (= Sanskrit *asura*) Mazdāh, called the latter the 'Daevayasni' or the 'Deva-worshippers' [*Avesta*, Gatha II, Hā 3, para 1, etc.]. The Achaemenian (Hakhamanishi) rulers (c. 700-331 BC) of Iran are known to had been taking pride in calling themselves in their inscriptions the *airyas* (= Sans., ārya) [*Sculptures & Inscriptions at Behistun*, Lon, 1907 p. 160].

317-I. As regards the pre-Vedic Indo-Aryans of the Gangetic valley, we do not find a distinct name for them in the Puranas, though they contain an account of twelve Devasura-sangrāmas or the Wars between the Devas and the Asuras which had nothing to do with the Iranians. They were fought indeed between the Indo-Aryans and the Assyrians as we shall see later. The references to the social stratification into the priests (the Brāhmaṇas), the warriors (the Rājanyas), the Vaiśyas (the farmer-traders' class), etc., occur later in the Vedic literature {120-I} and the probability is that the system was borrowed by the Rigvedic people from the pre-Vedic Indo-Aryan community, when, in the course of the former peoples' eastward shift as a result of the drying up of the Sarasvati {104-I, 3}, the social contact between the two Indo-Aryans began to grow intimate. "Gradually through the Epic Period" writes C. V. Vaidya, "they lost sight both of the Asuras by distance, and of the Dāsas. They now spoke of the Aryans as distinguished from the Mlechchhas who surrounded their country. When the cow of {the sage} Vaśishtha created the Mlechchhas to destroy the army of Viśvāmitra who was trying to take her away by force, it is stated that the cow created from the several parts of her body the Palhavas, the Draviḍas, the S'akas, the Yavanas, the S'abaras, the Pouṇḍras, the Kiratas, the Siṃhalas, the Barbaras, the Khasas, the Chibukas, the Pulindas, the Chinas, the Hūṇas, the Keralas, and many other Mlechchhas. A somewhat different origin is however given in another place which seems to be the more ancient belief, viz., that from Yadu were born the Yadavas, from Turvasu {167-I} the Yavanas, whereas the sons of Druhyu were the Bhojas and those of Anu were the Mlechchhas.. It seems also probable that the Aryans of India knew of these Yavanas and S'akas and Hūṇas and Chinas long before they actually invaded India.. A śloka from the Manusmriti is very significant. 'All peoples who are outside the castes born of the head,

57 – The name of a country called Kush and a people called Kuśiya are found in several old Persian inscriptions. The Hamadan inscription of Darius I (c. 522-486 BC) records thus, "hachā Sakaibish tyaiy para Sudgam amata yatā ā kushā hachā Hindauv amata yatā ā Sparda", i.e., "from the S'akas that are beyond Sogdiana (between the Oxus and the Jaxartes)–from there–as far as Kush, from Hindu (the Sindhu or the Indus Valley) – therefrom – as far as Sparda (Sardis in Asia Minor)" [Weissbach, *Die Keilinschriften der Achämeniden*, Berl, 1911, p. 34].

the arm, the thigh and the foot of Brahmā whether they speak the Aryan or the Mlechchha languages are Dasyus" [*Epic India*, Bom., 1907, pp. 25-6 *MS*. X]. Yāska explains the word *ārya* as *Īśvara-putra*, the son of God, and Sāyaṇa explains it as one who is learned and performs the sacrifices [Dutt, N. K., The *Aryanisation of India*, Cal. 1925, p. 73-4]. "In later literature", states Dutt, "Arya came to mean noble and Dasyu a robber. But even then the original meaning sometimes peeps out, as in the words like ārya-dharma and ārya-vrata (duties of an Arya)". The *Manusmriti* preserves traces of the word *ārya* as having been used to denote a distinct people. 'A person begotten on a non-Aryan woman by an Arya is an Arya [*MS*. X].' It therefore follows that the term Arya that may well have meant originally a 'plow-cultivator' among the Indo-Aryans before their arrival in India in successive waves, acquired a religious meaning in India among them i.e., those who did not follow the Vedic ritual and ethics were Non-Aryans in the sight of the former, even though they spoke Indo-European languages, like the Yavanas, (Ionians), the Palhavas (an Iranian people), the S'akas (Scythians) and the Siṃhalas (Ceylonese).

318-I. Since the Vedic priests and composers who were at the top of the society were of mixed complexion, dark (Kaṇva Dirghatamas, and Angiras were dark-complexioned according to the *Rig-veda*, I, 116, 23; I, 158, 6; X, 42-44, the sage Krishṇa Dvaipāyana Vyāsa, the greatest literary figure of early India who organised and executed the remoulding into the Vedic cast of the entire traditional history and religion as contained in the Puranas, the Epics, etc., that had originally belonged to a pre-Vedic Indo-Aryan community of the Gangetic valley, was the son of an Austric fisherwomen, Fn. 24), fair, as well as of low birth. Vatsa, a Vedic singer, a descendent of Kaṇva [*Rig-veda*, VI, I; VIII, 8; etc.], was called a śūdra-putra [*Panchaviṃśa-brāhmaṇa*, XIV, 66]. Kakshivat, a Brahmavādin, was the son of Dirghatamas by a śūdra maid-servant [*Bṛihaddevatā*, IV, 24-5]. Mahidāsa, the author of the *Aitareya Brāhmana* of the *Rigveda*, was probably a śudra. According to the *Mahābhārata*, Anuśāsana-parva, LIII, 13-19, Parāśara was born of a śvapāka (sweeper) woman, Kapinjalāda of a Chāṇḍala (Namaśudra; an exterior caste traditionally being the lowest in the Hindu society stated to have sprung from the union of a Brahman woman with a śūdra man found in the Gangetic valley, specifically a caste of cultivators, boatmen and fishermen in Bengal and Assam) woman, Vaśishtha of a prostitute (gaṇikā), and the best of the sages (muniśresh ha) Madanapāla was the child of a boatwoman [Sharma, R. S., *S'udras in Ancient India*, Del, 1958, pp. 63-4].

319-I. In the light of this evidence, the Vedic term *varṇa* could have hardly denoted the skin-colour. The term, as it occurs in the compound the varṇāśrama, therefore, had nothing to do with the fourfold stratification of the Indo-Aryan people on the basis of skin-colour. They were indeed the functional classes as we find among numerous ancient peoples and such classes become hereditary when specialization in various trades demand it. The pre-Vedic Indo-Aryans, too, were looked upon differently by the Vedic peoples, as the instance of the Vrātyas of the *Atharvaveda*, XV, makes it clear. The Vrātyas were regarded as begotten by a śudra on a kshatriya woman and were placed in the category of the Chāndala [*Mhb*. Anuśāsvana-p., 84, 28]. They find a place among the victims at the Purushamedha or the human sacrifice in the *Yajur-veda* [Vājasaneyi-samhita, XXX, 8; *Taittiya-brāhman*, III, 4, 5]. "That the Vratyas were non-Arayans is not probable", write A. A. Macdonell and A. B. Keith," for it is expressly said [*Panchaviṃśa-brāhmana*, XVII, I] that, though unconsecrated, they spoke the tongue of the consecrated; they

were thus apparently Aryans.... probably they had already a somewhat Prakritic form of speech. The *Sūtras* mention their Arhantas ('saints') and Yaudhas ('warriors'), corresponding to the Brahmanical Brāhmana and Kshatriya "[*VI.* II, pp. 342-3]. They were associated with the Magadha country [*Atharva-veda*, XV]. "The Vrātyastoma (sacrifice), the object of which", states Louis Renou, "was to introduce into Brahman {Vedic} society non-Brahman Aryans on condition that they ceased to live as **Vrātyas**... The Atharva-veda presents them as divinised beings. It has often been suggested that **they entered India earlier than the general Aryan invasion** .... Otto regards the more ancient Rudra, as an essentially Aryan type, which Hauer makes the god of the Vrātyas" [*Vedic India*, Cal, 1957, pp. 106-7, 64].

320-I. The Rigvedic toponomy that covers parts of the Pakhtun and Baluch territories and the Indo-Sarasvati basin comprised the earliest Indian habitat of the Vedic Indo-Europeans. The nearest kins of these people, speaking in terms of linguistic, literary, mythological and sociological studies, were the contemporary Iranians. Both the communities had an identical pattern of socio-economic structure and their food-producing masses who bore the burden of priests and aristocrats were the Indo-European-speaking peoples themselves, instead of serfs and others as was the case with the Egyptian, the Babylonian, and the Hittite societies. Still further west in Babylonia, Assyria and Anatolia the Indo-Europeans were present among the Kassi-Mitannis as an aristocracy having its own priesthood. These Indo-Europeans had imposed economically themselves, their comforts, their aims, and their ambitions upon the food-producing masses speaking non-Indo-European Asianic languages. The speech of all these three Indian and Middle Eastern Indo-Europeans which belonged to the Satam group {271-I} possessed the dominance of the sound *r* over *l*. Still further west, we find the Hittites in Asia Minor {109. I} and the Mycenean Greeks of the Cretan Linear Class B script [Ventris, M., *J. Hellenic Studies*, 1953, etc.] in the eastern Mediterranean during the middle of the 2nd mill. BC. We leave out them here as they belonged to the Centum group and do not come into picture in the present context.

321-I "A characteristic, which distinguishes the languages of this stock both in Persia and India", obsesves P. Giles, "is the tendency to confuse *r* and *l*, a tendency which is characteristic of practicaly all the languages of the Far East. In India *l* is often found in words where the languages of the same stock in Europe show *r*... in the Old Persian *l* is found only in two foreign words, and has otherwise been entirely replaced by *r*" [*CHI-I*, p. 66]." The Aryans came in clans," writes S. K. Chatterji, "and their language had dialectal differences from clan to clan. There was also in all likelihood a linguistic continuity from Western Persia to the Panjab... The border-land dialects of the Indo-Aryan agreed with Iranian in some matters. The basis of the Rigvedic literary speech was shown by Prof. Antoine Meillet [*Introduction à l' Etude comparative des langues Indo-Européennes*, Par, 1937] to have been a western dialect in the Aryan-speaking tracts This basic dialect of the Vedic speech had only the *r* sound—Indo-European *r* and *l* both featuring in it as *r*—as in Iranian (Old Persian or Avestic). The matter of *r* and *l* formed an important point in dialectal diversity in the old Indo-Aryan speech. There was thus one dialect—that of the West, which had no *l*, but only *r*. There was another, which seems to be represented by Classical Sanskrit and Pali in this matter, and had both *r* and *l*. And there was a third dialect of Indo-Aryan which eliminated the *r* and possessed only *l*: this dialect was probably of the extreme East, and it was pushed on further into the interior of the country as far as eastern U. P. and Bihar, before the second stage of

Aryan expansion and Aryan linguistic development, and become the Asokan Eastern Prakrit and the later Māgadhī Prakrit, both of which had no *r* but *l*." [*IA & H*, p. 51]. "During the period 1000-600 BC, which is the age of the most ancient Brāhmana works," writes S. K. Chatterji further, "we find occasional references in literature to linguistic conditions in India. It would appear that the spoken forms of the Aryan speech fell into three groups : (1) Udīchya or Northern {among whom were the Uttara-Kurus, the Uttara-Madras, Mujavants, Gandhāris, Kekayas, Bāhikas, Kāmbojas, etc., *VA*, p. 258}, (2) Madhya-deśiya or Midland, and (3) Prāchya, the Eastern....The dialect of Udichya tract was highly thought of as continuing to be nearest to the Old Indo-Aryan standard. The *Kauṣitaki Brāhmana*, VII, 6, says that in the Udichya, speech is uttered with greater discrimination; they go to the Udichya people to learn speech.... The dialect of Prāchya was current in U. P. and Bihar. This dialect was current among the Vratyas who were Aryan-spreaking tribes who did not owe allegiance to the Vedic fire-cult" [*IA&H*, p. 60]. As the criterea between Udichya and Prachya was based on the change between the *r* and *l*, the evidence, in conjunction with other facts, yields some interesting reselts.

322-1 According to the *Mānavadharma-S'astra* or the Laws of Manu, II. 17, 21-22, "That land which lies between the two divine rivers the Sarasvati and Drishadvati {139, 141-l}, is called Brahmāvarta....The country which lies between the Himavat {Himālayas, 155-l} and the Vindhyas to the east of Prayāg {Allahabad} and to the west of Vinaśana {on the Sarasvati, 125-l, 6, 4} is called Madhyades'a. But the region between these two mountains which extends as far as the Eastern and the Western Oceans, the wise call Āryāvarta". The oldest portions of the *Rig-veda*, like the old Iranian dialects, have only an *r* sound (*mruc-*, *rabh-*, *roma-*, *rohita-*), while already in its 10th book we meet with *l* in these words (*mluc-*, *labh-*, *loma-*, *lohita-*) while both the sounds are found in *svanguri* and *das'āngula*. The *Atharva-veda* shows more cases of *l* as do the later *samhitas*. In the *Brāhmanas* *l* becomes quite common [*Ghatage*, A. M., *Historical Linguistics & Indo-Aryan Languages*, Bom, 1962, p. 90-1], just as it does in the case of the later Māgadhi Prakrit of the Prāchya group. The toponomy of the *Atharva-veda* and the *Brāhmanas* which are later in date than the Rigveda bear witness to the main Vedic habitat as having been extended or shifted to the middle Ganges in eastern U. P. and Bihar beyond Allahabad where the intervening Madhyades'a ended. The major process of change from *r* to *l* is fairly advanced in the dialect of the *Atharva-veda*, as we have seen, and in view of the geography of this *samhitā*, the change appears to have taken place on the Sarasvati. This phenomenon of a phonetic change having taken place in the course of the migration or extension of the Vedic habitat from the Indus to the Gangetic valley warrants on our part to suppose the presence of more than one Indo-European linguistic groups in the transitional zone of the Sarasvati basin or Brahmāvarta {names have often changed: Samantapanchaka, 125-l, 6, 27; Kurukshetra, Fn 27; Brahmāvarta or the nuclear Āryaland or Aryāvarta of the later conception} in order to explain its mechanics, for such changes do not normally occur in isolation. We have already listed earlier some other changes, both secular and religious which had also taken place in the course of this very process of environmental expansion of the Vedic people that seems to have resulted mainly from the drying up of the Sarasvati and the formation of the Indian Desert during the later half of the 2nd mill. BC {119, 122-l}. The changes involved included the transition of food economy from wheat-barley and dairy products to rice and fish: the simultaneous introduction of the fourth Veda, the Atharva [ngirasa]; the fourth varna, the S'ūdra;

the metal, iron: the submission of the Vedic cult of an Agricultural Horizon to an earlier cult {the Agamic or Puranic, 121-I} of an older Animistic Horizon {63-I, 2}; the increasing infiltration of Puranic cult or culture and historical tradition that betray cultural borrowings from Egypt (the conception of the Hall of Justice, the lotus symbol, the cow-worship, transmigration, ahimsa, etc.) and Babylonia (Flood-legend, the sea-god Varuna, the conception of the hell, statecraft, etc.) as well as from a still earlier Indo-Pacific or Austric culture complex {169-175-I}, which had in its religion some prominent deities exclusively connected with the ocean, a few to name, the prototypes of the Great Serpent {S'esha}, a Tortoise-god with the mythology of ocean-churning which even as late as the period of the Indic kingdoms was current in Southeast Asia [*LEM*: p. 382], a great Fish-god that became the archetype of the Puranic Varuna and the Sumerian Enki, and the supreme deity of the Hinduism Nārāyaṇa, the God of the Great Deep.

323-I. It is further interesting in respect of the easternmost limits of the Indo-European expansion in India that *Baudhayana*, I, 1, 2, 12; *Vasishtha*, I, 15; *dharma-śāstras* or law books which are somewhat earlier than the *Mānavadharma-śāstra*, refers to an older authority, the Bhāllavins, stating," Now the Bhāllavins quote also the verse : 12- In the west the boundary-river (the Indus ?), in the east the region where the sun rises (Udayāchala) as far as the black antelopes wander, so far spiritual pre-eminence is found." The *Mārkaṇḍeya*-purāṇa, 57-58, mentions Udayāchala, Lauhityā (the Brahmaputra) and Kāmarūpa (Assam) lying in the eastern India. Other eivdences, too, make it highly probable that the Udayāchala hill was situated at Prāgajyotish (Gauhati) in Assam [Choudhury, P. C., *HCAS*, pp. 13-14,434]. We have noticed earlier with reference to the Kalitas that a pre-Vedic Indo-European wave had reached Assam and from this view-point it appears in the fitness of things that the Bhallavins who must have flourishod before Baudhayana, c. 600 B.C. [*VA*, p. 477], regarded Āryavarta as extending into Assam [Chakladar, H. C., *Aryan Occupation of Eastern India*, Cal. 1962, pp. 3-12]. But this was true of the pre-Vedic Aryans and not of the later Vedic people. The post-Bhallavin passages of Baudhayana, Vasishtha and Manu speak of the second Aryan that belonged to expansion of the Vedic people who appear to havo reached Bengal and Assam the protohistoric during early times.

324-I. Thus more than one traditions of the expansion of Āryavarta or of the Indo-Europeans in India, obviously from the west because these people belonged to the Western basic food producing community of the Middle East and Inner Asia, seem to have been preserved in the ancient Indo-Aryan literature. The first descernible exapansion was that pre-Vedic event whose memory is preserved in the tradition of the Bhallavins when Aryavarta stretched from the Boundary River in Sind-Panjab to the Udayachala or the Indo-Burmese border hills in Assam, beyond the Eastern Sea; or the Bay of Bengal. It appears that a little before the Vedic age, the entire hilly territory stretching from the upper Euphrates and Azerbaijan in the west to the Indus valley in the east formed largely an Indo-Iranian habitat wherein the language of the people was characterized by the dominance of the sound *r*. Two types of population may both linguistically and sociologically be recognized among them:—

325-I.- In the Indian portion of the Indo-Iranian milieu or the later Udichya area and in Iran as far west as Azerbaijan the entire society from the food-producing peasants to the parasiting warrior-rulers and priests was linguistically a homogeneous

community. They were, however, subdivided religiously into an Ahura-worshipping (Zoarastrians) and a Deva-worshipping peoples whose dialects were characterized by such phonetic features as the interchangeability between the sounds s and *h*. "The Iranians", writes B. K. Ghosh, "had retained a distinct memory of the Indo-Iranian common home (Erānvej) in their mythology....The primitive Indo-European religion recognized only nature-gods (sky, sun, wind, etc.) and a fire-cult. But already the undivided Indo-Iranians knew a Soma cult ...... Indo-Iranian society had therefore ceased to be culturally homogeneous even before the forefathers of the Indian and the Iranian Aryans parted company, and it was more the effect than the cause of the cultural contrast revealed in religion. The Old Indo-European term **deivo* (= Indo-Iranian *daiva*) was apparently considered inappropriate for the new abstract and ethical deities, and a new term, *asura*, perhaps borrowed from a higher civilization, came to be used as their designation, Varuṇa was the chief of these ethical deities just as Indra was the chief of the older nature-gods......And in India in the oldest period all the great gods received the title *Asura* as a decorative epithet, though later it came to be used exclusively as a term of abuse {it was subsequently though allegorically applied to such religious opponents as the Jainas; *AIHT*, pp. 290-1}. In the *Brāhmaṇas* the Asuras have been represented as superior to the *Devas* and both in the Vedic and Puranic tradition they are regarded as the elder brothers of the Devas or gods. They are as far above the Dāsas and Rākshasas as the *Devas* themselves " [*VA*, pp. 220-1]. In the Rigveda the Āryans, who are defined in the *S'atapatha-br.* Kāṇva, IV, 1, 6, as consisting of three varṇas, the Brāhmaṇa, the Khatriyas and the Vaishyas, are generally contrasted with the Asuras ['godless Asuras', VIII, 85, 9; 'Indras as Asura-slayer', VI, 22, 4; 'Indra shattered 99 forts of the Asuras', X, 138, 3], on one hand; and with the Dasyu [I, 100, 12; II, 13, 9, etc.] Dāśas [IV, 30 21; VII, 86, 1, etc.], on the other. We have observed earlier that the Dasyu-Dāśas were a people who were not found in the west of India. This may indicate the two borders of the region inhabited by the Indo-Iranians of the *r* group; the territory of the Assyrians or Assyria in the west and the Luni basin overlooked by the Aravallis in the east. Beyond this lay the region of the pre-Vedic speakers of the *l* group of the Old Indo-Aryan speeches in the Ganga-Brahmaputra valley stretching as far east as the Udayachala in Assam. It is well-known that in ancient Iranian every Indo-European l had become ar *r* [Ghosh, B. K. *VA*, P. 335]". The Indo-Iranian (Aryan) speeches in the east, developed gradually into the Indo-Aryan by contact with the non-Indo-European people and assumed the form of the Rigvedic Old Indo-Aryan. As a result of this, the non-Indo-European retroflex or cerebral sounds (ṭ, ṭh, ḍ, ḍh, ṇ, ḷ, ṛ), typical of mainly the Dravidian languages, were engrafted into the language. We find this stage of language even in the Rigvedic hymns. The evidence indicates in that case that the Rigvedic people must have come into a close contact of Dravidian-speaking populations before they were settled in the Indo-Sarasvati basin. What did the Rigvedic people call these Dravidians we do not know. They may have probably been included under the Dasyu-Dasas of the Rigvedic hymns. An important point arises here. We have noted down the original meaning of the term Ārya as a 'ploughman' {Fn. 50}. But the term does not appear to have been employed by the Indo-Iranian people in this sense. Now the sense was changed to the 'noblemen' who comprised the three functional classes, the priests, the warrior-rulers and the peasant-traders. Even the pre-Vedic Indo-European society seems to have had such classes, as we can surmise on the basis of Manu, X, 20-30, wherein Vratya-Brahmanas, Vratya-Kshatriyas and Vratya-Vaishyas are mentioned.

326-I. The chart captioned, 'The Techno-Economic Stages during the Past Human Process, etc.'

327-I. We have already observed that as soon as the human urges for material equipment and other requirements for sustaining the life {58-I. I. 2.} reach a degree of satisfaction, the instinctive urges then find their turn and begin to assert themselves, as we have seen above, and as a result of which the human mind undergoes a development the goal of which is still incomprensible to us. So long as hedonism of one person does not prejudice or encroach upon the same priviledges of another person, it may be tolerated: otherwise it becomes worthy of calling the parasitic hedonism. The ancient or primitive man had hardly an idea of human rights. It is in the form of slavery that parasitic hedonism makes its first appearance in the human process. In primitive communities warfare is a normal feature. Head-hunting, cattle-lifting, tribal fueds, etc., all involve more or less some sort of fighting and disposal of war-captives becomes always an issue. Hunting, fishing and horticulture are specialists' jobs. The war-captives are not entrusted with these works. In the beginning they were killed for cannibalistic feasts and later they were maintained as victims for religious sacrifices. With the introduction of horticulture the life became semi-settled and domestic and community-work began to increase and the institution of slavery came into being. It was through slavery that the Eastern community, too, succeeded in having auxilary muscle energy, but, as we have already noticed earlier, the slavery could not match economically the animal-domestication of the Western community, because, the human labour had to be given the food from the stock of the human food, whereas the domestic animals did not need it and subsitted on naturally-grown grasses or agricultural by-products not consumed by man. Thus the Western community was economically at more advantage with its domestic animals, than its Eastern counterpart was with its slaves. Further, it should be borne in mind that the slaves in ancient world had mainly to do the domestic and the craftwork. They were not proved in food-production as useful as did the domestic animals. Milk and flesh was an additional advantage of domestic animals. Thus slavery has not played a conspicuous role in the food-producing economy of the mankind. However, it has indeed helped materially the master-families in raising property by manufacturing articles for them and rendering other services. Another contribution of the slavery to the civilization is that by freeing fairly a large number of individuals (masters) from personal, domestic and community obligations, it has helped a section of the population to make some progress in the field of the development of instinctive urges, more particularly those connected with aesthetics. We are indeed thankful to the slavery and the servitude for giving the mankind what is known as the classical art and the Seven Wonders of the Ancient World. Usuary too arose as a device for parasitic hedonism, but in primitive life which knew too little of economic unequalities, it had no much scope for development.

328-I. The real parasitic hedonism began when the productive, private, or individual property became a reality as a result of the adoption of the plough culture that rendered the peasant life permanent at a single place. This condition was more or less fulfilled for those human communities which occasioned to develop or adopt the food-producing technology and began to grow cereals first in Southeast Asia and later in the Middle East. However, the life was still nomadic under horticulture as it was in the earlier food-gathering stage and the conception of individual property or capital had therefore no chances to develop. The

farmer, however, has never been able generally to be virtual master of the land he tills, though he could create and inherit earned forms of property. We have discussed the subject in 326-I under the head 'From Humanity down to Subhumanity : Pre-Industrial Parasitic Systems.' It has been noticed that how man, under an instinctive pressure for pursuing an inner anagogic development, has been striving to achieve Godhood (Brahmanhood) through the media of positive aesthetic urges (altruism; worship; science; the arts of love, peace and futurism; sports; gastronomy connected with foods of productive economy of agriculture, dairying and chemical food-manufacturing as against those belonging to predatory economy of hunting, fishing and slaughtering; etc.). It has further been noticed how this pressure has been increased on man to the extent that he does not like to do any manual and mental work for earning his food and other material requirements in favour of the inner development. But the pity of the whole situation is that the present human economy which rests predominently on the destruction of other components of the mechanism of the phenomenon of the life in the Cosmos through hunting, fishing and slaughtering, is not providing that right type of energy which feeds the course of the inner development through the right path of positive aesthetic urges. Man in these circumstances tries to readjust his response to the irresistible pressure for the inner development in the only ways open to him and that is through the negatives of the positive aesthetic urges (predation; parasitism; hatred; superstition; aggression and warfare; domination over others; the arts of the ugly, the grotesque and the despair; imperialism; capitalism or reaction to it in the form of socialism; predatory gastronomy that is based on hunting, fishing and slaughtering; etc.). His resorting to this way to which there is no alternative in the current predatory economy of hunting, fishing and slaughtering, gives rise to an illusion in his mind that he would be able to achieve his goal of raising himself to Godhood by belittling, humbling and subduing the others by physical force and cunning. He tries to do so under the aforesaid illusion; firstly, to raise him to Godhood or sole supremacy in the world; secondly, to derive his material provisions and luxuries at others cost through both predating and parasitizing them and without any work on his part, under the impulse we have already noticed. It is from this illusion and its implentation that warfare, political and economic domination; imperialism; capitalism of various types, such as, economic, political and intellectual, have arose, developed and has dominated the course of history of mankind so far. Practically all the intersocial conflicts and frictions that often lead to warfare owe their origin to this factor. Another factor is that every community pursuing higher and higher a path of progress can do so normally as long as it can keep itself under the illusion that they are superior to all or many others. The community begins to deteriorate when it fails to maintain this illusion. It is why even those communities to whom the 'civilized' people regard as the most wretched and degraded ones in their own interest, entertain the same sort of outlook for the former. Thus castism of a type prevails even between a nation and a nation and a people and a people in the world.

329-I. All the above factors began to influence man greater and greater as he became more and more able to produce through agriculture larger and larger quantities of surplus food, luxury goods and other material equipment, and consequently the agriculturist began to raise himself in status by employing slave and other forms of human labour, in order to feel that he is superior to some one and also to derive material provisions at the minimum of cost for him. It appears that in some such manner the classes of *awlum* or

amelu in Sumer and of *śr* arose in Egypt, and the 'plough-cultivator' Ārya too upgraded himself to the noblility, and hence the semantic change of the term *ārya* from the 'plough-cultivator' to that of the 'noble.' But we come across this changed meaning of the term only among the Mitannians [hurri or arri, Childe, G. V. *Aryans*, Lon. 1926, pp. 7], the Iranians {*airya*, 104-I} and the Vedic Indo-Aryans (*ārya*). Among the European and the pre-Vedic (Puranic) Indo-Europeans the term, however, retained the survivals of its original meaning {204-I}.

330-I. The Vedic society introduced its members as comprising a threefold socio-economic system of a nobility called the Ārya, which had its parallel in the Middle East both in Iraq and Egypt [royalty, priests, soldiers and craftsmen, and freemen: under this nobility was a labour class of slaves and serfs, *HM*, I, pp. 468-80]. The same is true of the Hurri-Mitannians of northern Iraq, Kurdistan and Azerbaijan, who worshipped the Vedic deities {107-I}. The aristocracy, the *Mariannu* caste, and its priests were at the top with a right to possess chariots. The Hanlahu, the middle class, comprised the tradesmen, gardeners, royal herdsmen and craftsmen. The Hupšus were poor cultivators. At the bottom of this tripartite system were the slaves and serfs. The Rigvedic nobility class of the Aryas was not supposed to practise cultivation. Howevor, they did so [*Rigveda*, I, 51,8; 130,8; 156,5; *VI*-I, pp. 64-5]. It was the duty of the Vaishya, the Aryan class at the bottom of the scale {104-I, 3; 316-I}, to cultivate, herd and trade. There was no labour class of slaves and serfs. This suggests that the Rigvedic society was both economically and socially a community degraded a level below from its original higher state, which, it had probably in Kurdistan and Azerbaijan. This fact also lends some support to our plea that the Rigvedic people were the Aryan refugees from the Middle East who were uprooted there by their arch-enemies, the Asuras or the Assyrians {107-I}. The Vedic religion demonstrating a very strong Sumero-Semitic influence {115-I, 3}, too, bears a further witness to this fact. A pre-Iron Age semi-rural community such as was the Rigvedic society needed only a few artisans like potters and carpenters ['takshan', *Rigveda IX*, 112,1 > 'tarkhan', Punjabi].

331-I. We have already discussed that the majority of those new economic, religious, cultural and historical elements which we find as gradually and silently creeping into the contents of the post-Rik Vedic literature, first through the mandalas or the books Ist and 10th of the Rigveda itself, then certain portions of the *Yajur-veda*, the *Atharva-veda* in its entirety, and later the *Brāhmaṇas* of these *samhitās*, etc., did not emerge from a natural development of the Rigvedic institutions, they belonged to a pre-existing civilization of a pre-Vedic Aryan (Puranic) city-states of the Gangetic valley and commenced to enter naturally as a result of a process of acculturation between the two Aryan institutions, the structure of the fugitive Rigvedic culture, as it began to shift eastwards into the Gangetic valley from its first Indian habitat in the Indo-Sarasvati basin on account of environmental factors {117-119-I}. One of the chief distinctions between the two Aryan institutions was that the priest (Brāhmaṇa) was at the head in the Rigvedic community, whereas the Puramic community was led by the aristocratic kshatriyas many of them having been prominent philosophers like Janaka of Videha. The Vedic priests were trying their level best to establish their priesthood in the Gangetic valley. The rivalry for power between the two priesthoods is symbolized in the Indian tradition by the rivalry between the sages Vaśishṭha and Vishvāmitra. People are often seen improving upon or adding

new elements to their religious cult more particularly at the time of a crisis. The disastrous consequences of the Mahabharata War that also seems to have coincided with the final defeat of the Aryans in the Middle East, appear to have led the Vedic cult to its establishment at the courts of Kuru–Pānchāl in the eastern partion of the Sarasvati basin (later Brahmāvartta) and the upper Gangetic Doab, from the time of Parikshita {125–I, 3}. Vidagdha Māṭhava soon carried it to Videha {133–I}. The new Vedic priesthood seems to have undertaken to re–edit the entire pre–existing Aryan literature of the Gangetic valley, the Puranas, etc., in the manner it may serve the purpose of the establishment of supremacy and expansion of the Vedic cult.

SHUDRIZATION AND VRĀTYASTOMA RITUAL AS THE INSTRUMENTS OF THE VEDIC ARYANIZATION AND ITS EXPANSION

332–I. Being essentially a pre–Iron Age rural community, though declined from urbanity, the Rigvedic society needed a few rural craftsmen like the potter, the carpenter [*takshan*, *Rig–veda* IX, 112, I > *tarkhan*, Punjabi], etc. But what was abnormal that this rural community used the chariots [*ratha*, *Rig–veda*, III, 15, 5; IV, 4, 10, etc., *VI*, II, pp. 201–2], a survival of their previous urban life in their pre–Indian habitat. So, the community must have had the class of *ratha–Kāra* (chariot–maker) also, though not directly mentioned in the Rigveda [*Black Yajur–veda*, XXX, 6 : *Atharva–veda*, III, 56, etc.]. In the course of the eastward shift of this society, it came accross three innovations for the assimilation of which it had to readjust itself socially. The first innovation was commencement of the Ferric Revolution (Iron Age) and iron began to replace bronze and stone for the tools and other equipment of agriculture, hunting, fishing, slaughtering, etc., and other aspects of life. The second factor involved change of staple cereal food from wheat–barley to rice, for the cultivation of which the services of those who were expert in it were needed. The third fact was that the rural Vedic society was now entering an urban *milieu* of a pre–existing Indo–Aryan civilization. Specialization in various professions leads a society to stratification. As the pre–Vedic (Puranic) Indo–Aryans of the Gangetic valley had achieved urbanization, it must have certainly been a stratified community and a threefold system among the Vrātyas supports the view {325–I}. It must have had urban artisans like goldsmiths, lapidaries, also blacksmiths as the Iron Age had already commenced, carvers, architects, turners, merchants, labourers, etc., [some of them find mention in the *Black Yajur–veda* XXX] but what was their social status in the threefold system, we do not know. The Vedic community, however, had to absorb many of them into its fold under the changing circumstances. As the profession and other factors did not permit these classes or castes to follow strictly the Vedic observances and rituals, a new varṇa termed the *śūdra* was created for their assimilation. This opened up the venues for those non–Vedic artisans and labour–classes who either spoke or adopted an Indo–Aryan tongue to raise their social status and this process of the shudrization played a great role in both linguistic and cultural Aryanization of the Austric and other non–Aryan communities. Every Ārya or 'dvija,' i. e. the twice–born, was a śudra during years between the birth and the upanayana or the sacred–thread wearing ritual [*Vāsishṭha–dharmasūtra*, II, 6]. Those śūdras, for instance the Vedic sages Vatsa, and Mahidāsa Aitareya, observed strictly the Vedic observances and ritual and were devoted to learning were raised to the highest status of the Vedic priesthood {318–I}. If a Brahmāṇā sold milk, he was reduced to the śūdrahood in three days [*Vasishṭha–dharmasūtra*,

II, 27]. "In the seventh generation," according to *Vasishṭha*, IV, 22, "men obtain a change of caste, either being raised to a higher one or being degraded to a lower one." According to the *Mahābhārata*, S'ānti-p., I, 969, the king Sudās, a great Vedic sacrificer, was a Sūdra just as Chandragupta Maurya was a Vṛishala. "Let him cast off a father," prescribes the *Gautama-dharmasūtra*, XX, I, "who assassinates a king, who sacrifices for śūdras....." "Let him treat Brahmanas," speaks *Baudhāyana-dharmasutra*, I, 5, 10, 24, "who tend cattle, those who live by trade, those who are artisans, actors and bards, servants or usurers, like śūdras." The Vaishyas and śūdras are often grouped together [*Black Yajur-v.*, X, 29 : *S'atapatha-br.*, V, 4, 4, 19-23 : *Kātyāyana-śrautasūtra*, XV, 7, 7, 11-20 : "There are 8 marriage-rites," states the *Baudhayana-dharmasūtra*, I, 11, 20, 1—16." 13-The 5th and 8th are lawful for Vaishyas and S'ūdras : 14-For Vaishyas and S'ūdras are not particular about wives."] in the Vedic literature. All this evidence shows that in the beginning the S'ūdras enjoyed a higher status, which they later seem to have lost, probably because the entry of various simple peoples and tribes into the S'ūdra-varna would have become unmanageable to the priesthood. We have noticed above that the Brāhmanas were turning to other professions even of artisans, because all of them could not derive support from priesthood. They were outcasted for these and other reasons. Nobody could have checked these outcaste priests to initiate alien peoples to whom the proper priesthood may not have considered worthy and to serve them as priests of 'lower' peoples and tribes adopting Indo-Aryan languages.

333-I. The hold of the Vedic priesthood could occupy that much of the area which they called Āryavartta (later) and which extended from the bed of the Sarasvati in the west to Videha in the east and the Himalayas in the north to the Aravallis in the south {Fn 25}. Beyond this lay the territory of such peoples of mixed origin as, according to the *Baudhayana*, I, I, 2, "13-The inhabitants of Avanti (Malwa), of Anga (eastern Bihar and a part of Bengal), of Magadha (South Bihar), of Surāshtra, of Dakshina, of Upavṛit, of Sindh, and the Sauviras", and therefore, "14-He who has visited the countries of the Āraṭṭas, Kāraskaras, Puṇḍras, Sauviras, Vangas, Kalingas, or Prāṇūnas shall offer a Punastoma or a Sarvaprishthāishṭi". Most of them were linguistically the Indo-Europeans and have very probably belonged to the pre-Vedic Aryan fold speaking the 'Outer Band' Indo-Aryan languages of A. Hoernly [*A Grammar of Eastern Hindi*, Lon. 1880] and G. Grierson [*IG*, I, p. 351]. Another fact that even those pre-Vedic peoples residing in Bihar, Bengal and Orissa were the Aryans is that there were professional sūtas, i. e. the chariateers and bards, among the Māgadhas since the time of Prithi Vainya {192-I} and we know that the chariot was characteristically connected with the Aryans {50-II}. It was probably through the Vratyastoma ritual that these people were sought to be initiated to the Vedic cult.

334-I. According to the *Tāṇḍya-mahā-brāhmaṇa*, XVII, etc., the Vrātyas wore a turban (ushṇīśa) and tip-tilted shoes {the Hittites also wore this type of shoes: they are still worn in Kashmir, Bundelkhand in M. P.: their origin may to a degree be traced typologically to the native snow-shoes of the Northern Latitudes}; carried a whip (pratoda) and a small bow (jyahrada); rode in rough waggons (vipatha) having a framework of bamboo and drawn by horses; "So was Magadha, writes A. de Riencourt, "remote from the famed 'middle country' {Madhya-deśa} of Kurus and Panchalas. Its population was mixed, only partly Aryanized by the renegade Vrātyas, and incompletely Brahmanized. Brahmins and Kshatriyas in Magadha were spoken of in derisive tones as

Brahmana-bandhu and Kshatra-bandhu, i. e., 'so-called Brahmins' and 'so-called Kshatriyas.' One can sense that the Magadhans were addicted to a certain form of 'social democracy' which did not countenance the aristocratic class distinctions of older states and societies" [de Riencourt, A., *The Soul of India*, NY, 1960, p. 58].

335-I. The references to the Vrātyas [*Yajur-veda*, Vāj. XXX, 8; *Atharva-veda*, XV; *Panchaviṃśa-brahamaṇa* of the Sām-veda XVII, 1, 9; *Taittiriya-br.*, III, 4, 5, 1; *Āpastamdha-śrautasūtra* of the Black Yajur-veda, XXII, 5, 4-14; *Kātyāyana-śrautasūtra* of the White Yajur-veda, XII, XXII; *Tāṇḍya-mahā-brāhmṇa* of the Sām-veda, XVII, etc.] have been studied since A. Weber first wrote on them [*Indische Studien* I, 1850] in 1850. Subsequent studies, among which those of by H. Zimmer [*Altindiches Leben*, Berl., 1879, p. 216], R. R. Bhagavat [*JBBRAS*, XIX, p. 357], Bloomfield [Atharva-Veda & the Gopatha Brahmana, 1909], R. B. Chanda [*Survival of the Prehistoric Civilization of the Indus Valley*, 1929, p. 41], J. Charpentier [*WZKM*, XXIII, pp. 124], A. B. Keith [*JRAS*, 1913, p. 155] and A. A. Macdonell [*VI*, II, 1958, pp. 342-3], K. Chattopadhyaya[*Calcutta Review*, May, 1924, p. 287], M. Winternitz [*Festschrift für L. Scherman*, 1914; *HIL*, I, 1927, pp. 154, 191, 306], J. W. Hauer [Die Anfaenge der Yogapraxis, Berl, 1922], D. R. Bhandarkar who maintained that they could be identified with the people of the Harappa Culture [*Some Aspects of Ancient Indian Culture*, pp. 42-3], A. P. Karmarkar ['The Vratyas in India', *JUB*, XI, 1, 1942, pp. 80-91], Sampurnanand [*The Atharva Veda-Vrātyakāṇḍa*, Mad., 1956], Chitrabhanu Sen ['Vrātyas & Vedic Society', *JOIB*, XII, 3, 1963, pp. 288-99], A. C. Banerjea [*Studies in the Brahmanas*, Del. 1963, pp. 81-172], and few others are noteworthy. "The Vratyās", observes the last-named scholar, "are non-Brahmans performing rituals, which seem to be similar to some of the orthodox Brahmanic rites, but differ in details....They could be incorporated within the Brahman folk only through the performance of the Vrātyastomas, which are all conversion ceremonies, and have the form of the Ekāhas....The semi-mythical Pṛthu Vainya alone appears together with the Divine Vratyas, an incident which indicate that the Vainyas were looked upon as Vratyas by the orthodox ritualists" [Benerjea, A. C., *op. cit*, 'The Vratya Problem', pp. 168-9]. The *Brahmāṇḍa-purāṇa*, Madhyabhāga, LXIII, 138, narrates the event of the conquests of Sagara of the Solar Dynasty of Ayodhya who flourished about 55 reigns before the heroes of the Mahabharata War, and while doing so points out how the various tribes of the Sakas, the Pahlavas, the Yavanas, the Kambojas, the Pāradas, the Mahiśakas, the Dārvas, the Cholas and the Khasas went to Vasiṣṭha for rescue mainly through the fear of destruction, and how it was that they were rescued by the famous sage after having turned them into the Vratyas. "There were", states *Mhb*, Karna-p. XXXVII, 44-46, "the five rivers S'atadru, Vipāśā, Irāvati, Chandrabhāgā and Vitastā, and which have the Sindhu for their sixth flow, there situates the region of the Araṭṭas distant from the Himavant....the manes and Brahmanas never accept gifts from the Vratyas (fallen ones), from those that are begotten by S'ūdras upon women of other castes and from Vahikas who never perform sacrifices. It is further interesting that the *Mhb*, Drona-parva, CXLIII, 17, designates the Andhakas and Vṛishnis, the Yadu clans to which Krishna and his people belonged, as Vrātyas.

336-I. Yādavas or the Yadus, according to the *Rig-veda*, VI, 20, 12, were brought by Indra from across the sea (samudra) togeather with the Turvas'as; or the Trojans [118-I] from whom, as the Puranas state, the Yavanas or the Biblical Jawan or Ionians had descended. The tradition receives support from the *Harivamśa-purāṇa*, XCIV, which first brings the Yadus to Surashtra [Chanda, R. P., *The Indo-Aryan Races*, I, Rajshahi, 1916, pp. 28-9]. The Vrishni and Andhaka Yādavas of Ānartta (Gujarat) and Saurāshtra were

branded as the Vratyas in the *Mhb.* Drona-p. 143, 15, and Krishṇa himself was so greaded, and the Saurashtra Kings were considered Vratya and mostly S'ūdra in the Puranas [Pargiter, *D.K.A.*, pp. 54-5 ; Shafer, R., *Ethnography of Ancient India*, Gottingen, 1954, p. 20]. Next, the *Brahmāṇḍa-purāna*, Madhyabhaga, LXIII, 138, narrates the event of the conquest of Sagara, and while doing so points out how the various tribes the S'akas, the Palhavas, the Yavanas, the Kāmbhojas, the Pāradas, the Mahishakas, the Dārvas, the Cholas and the Khasas went to the sage Vasishtha for rescue through the fear of destruction, and how it was that they were rescued by the sage after having turned them into Vrātyas.

337-I. "The Skanda Purana recounts an episode," writes H. H. Risley, "in Parasu Rama's raid upon the kshatriyas, the object of which is to show that the Kāyasths are by birth Kshatriyas of full blood, who by reason of their observing the ceremonies of the S'udras are called Vrātya or incomplete Kshatriyas....the Mongoloid Kochh of Nothern Bengal describe themselves as Rajbansis, or as Vrātya or Bhanga (broken) Kshatriyas who fled to these remote districts before the wrath of Parasu Ram." [*The People of India*, Cal, 1908, pp. 90-1]. According to *Manu*, X, 20-23, etc., there were the Vratya Brāhmaṇas, the Vrātya kshatriyas, and the Vrātya Vaishyas. From the Vratya Brahmanas were descended the Bhurjakanṭaka, the Āvantya (Malwa), the Vāṭadhānas, etc.; From the Vratya kshatriyas produced the Naṭas (acrobats), the Karaṇas (writers caste of Orissa=kāyastha of the Gangetic valley), the Khasas (Nepal, etc.), the Draviḍas (=Tamil-speakers), the Jhallas, the Mallas (of Pāvā and Kusīnara in Buddha's time : mentioned in *Mhb.* sabha-p. XXX : etc.), and the Lichchhavis (of Vaisālī under Vajji confederacy among whom Mahavira in c. 599 BC was born : proud of their lineage : the mother of Ajātaśatru, c. 490-458 BC, and 800 yrs later we find Samudragupta, AD 335-76, proudly recording that his mother came of this illustrious line) the last two belonging to north Bihar. The Vratya Vaishyas begot Kārush, Maitra, Satvat. The Satvatas, together with the Bhaimas, the Bhojas, the Andhakas, the Dasarhas and Vrishnis, formed a clan.

338-I. In Orissa the Kaltās or Koltās and in Assam the Kaltas [Kakati, B. K., *Kolitā Jātir Itivritta* in Assamese] are a cultivating Indian caste, often classed as belonging to the S'udra-varṇa. "Like Orissa," writes J. H. Hutton, "Assam contains Hindu shrines of great antiquity and survivals of ancient and probably pre-Hindu fertility cults. But it differs from Orissa in having a much stronger Mongolian element in its population. Traces of this are to be seen not only in the ordinary cultivating castes like Kochh and Kalita but even the higher castes whose forebears migrated from the United Provinces (UP), while the Ahoms of the Assam valley represent the Shans from Burma who conquered the country in the 13th century AD" [*Caste in India*, OX, 1951, p. 27]. B.B. Kakati states that there were early settlements of the Kalitas near Sadiya (Kalitā-deśa), as the genealogy of the ancestors of Gopāl Ātā shows [*Mother Goddess Kāmakhyā*, Gauhati, 1948, pp. 56-66]. E. J. T. Dalton thinks that they were the earliest Aryan colonists of Assam [Descriptive *Ethnology of Bengal*, Cal, 1872, pp. 79, 321]. W. Robinson writes that they were the spiritual guides of the Kochs, whose position is believed to have been degraded by the advent of the Brahmanas [*A Descriptive Account of Assam*, Lon, 1841, pp. 262-3]. In the opinion of K. R. Medhi they entered Assam before the Vedic Aryans and were non-Vedic Aryans [*JARS*, *III*, pp. 75-88]. The Kulutas mentioned in the *Vishṇu-purāna*, *II*, 4, and the Kulattha of the *Mhb*-Bhishma-parva, IX, 66, etc., were "living at the foot of the Himalayas", as states P. C. Choudhury, "and some of them were known as the Vrātya Kshatriyas. The association of the Kalitas with the Kolutas, as with the Buddhist Koliyas, appears almost certain" [*The History of Civilisation of the People of Assam to the Twelfth Century*, Gauhati, 1959, p. 110]. The

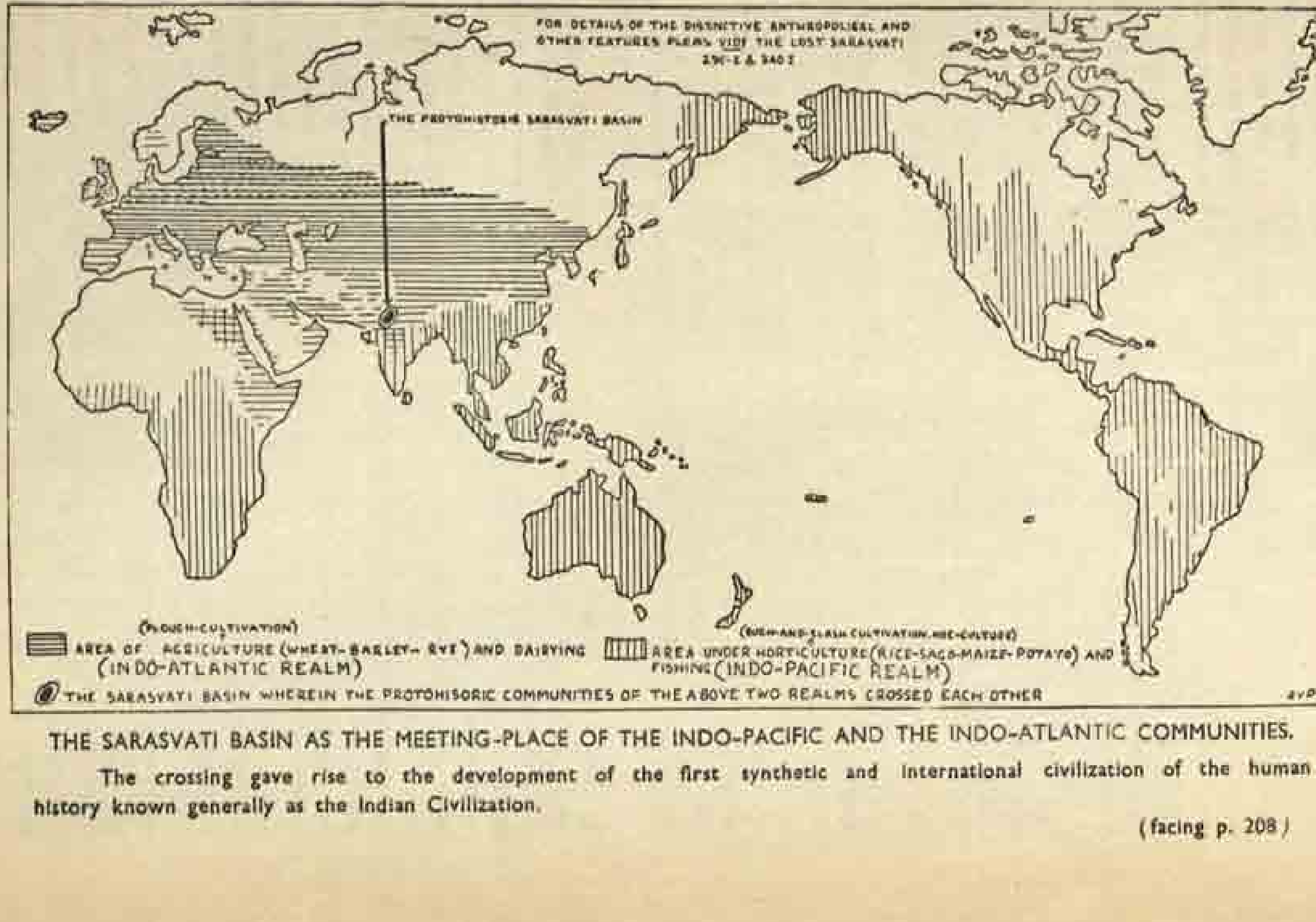
presence of the non-Vedic Aryans in Assam is pointed out by a number of writers [*JARS*, 1934, p. 161], and it is belived that the Assam valley was Aryanised long before central and Lower Bengal [*The History of Civilisation of the People Assam to the Twelfth Century*, Gauhati, 1959, p. 110: also, Barua, K. L. *Early Hist of Kamrupa*, Shillong, 1933, p. 23]. "The Kalitas form", writes Bhuban M. Das", a very important and interesting caste-group of Assam. According to some they entered India through the north-western route, settled in upper India and then migrated eastwards, ulitimately reaching the Brahmaputra valley. They were Kshatriyas. Again in the opinion of others they came to Assam before the Vedic Aryans. ['Ethnic Elements in Assam', *Pragjyotisha*, ed., Neog, Maheswar, Gauhati, 1965, pp. 5-6]." If an invading people", observes K. P. Chattopadhyay, "come into a country in fairly large numbers, as the Vedic Aryans are postulated to have done, pressure is brought to bear upon the people.... In such a case the earlier people are driven into places in which the country will allow of a fair livelihood, but which are difficult of access to the invaders. In India there are some such places, and the chief among them in North India are Nepal, Assam, and Chhota Nagpur. If therefore the people of the plains who offered resistance were driven out by the incoming Indo-Aryan tide, we should expect to find remnants of their culture in such places. Investigation shows that such is actually the case; but it also brings out, very definitely, that their culture was not inferior, as has been made out by E. S'enart [*Les Castes dans L'Inde*, Par, 1895] and others-and also that these earlier people were themselves the results of intermixture of a cultured race with less cultured still earlier people. The remnants of this earlier pre-Vedic culture in Nepal show definitely that while guilds were developed in that society, and the earlier cultured invaders tended to preserve their racial purity, caste proper as known in India, did not evolve.... In my paper on the analysis of Newar Culture in Nepal [JASB, XIX, 1923], I had pointed out the existence of a high level of culture in Nepal, derived from India and prior to the Brahmanic pastoral civilization.... This early culture, in itself complex-was characterized by (i) working in gold, silver, and copper, but not iron, (ii) terraced and irrigated cultivation, with the hoe but not the plough, (iii) a style of architecture comparable to that found in Malabar, (iv) distensions of earlobe, (v) a chief god who was formerly a human being, who annually rides in a car, releases Nagas to bring rain, and is worshipped by Saiva Yogis.... The Brahmans who introduced dairy culture into Nepal did not practise plough cultivation, nor employ cattle for any work.... Plough cultivation, and the use of cattle for work is associated with a different culture which came to Nepal later and is definitely associated with other Brahmanas, who looked upon the earlier Brahmans of dairy culture and also the people of copper culutre" ['History of Indian Social Organization', *JASB*, Letters, I, 3, 1935, pp. 384-5].

339-I. We have often noted earlier {Fn 13, 87, 91, 104, 118, 119, 120, 121-I, etc.,} that it was a pre-Vedic Aryan continuum correlatable with the two earlier (Indus Civilization and the Peninsular Protohistoric Civilization) urban cultures of Indian archaeological stratigraphy, ranging in time between c. 2300 and c. 1000 BC, into which the Vedic culture centering upon a horse-cult of a Babylonian pattern intruded from the west {117, 119, 124, 126-I, etc.,} and initially settled as a rural folk in the Indo-Sarasvati basin {124-I} at a time when the focus of the pre-Vedic Aryan civilization was located in the Gangetic basin (it includes the drainage areas of the Chambal and the Son rivers). The S'udras, Vrātyas, the Kurmi-Kunbis, the Kalitas, those mixed peoples enumerated by Baudhayana {333-I} seem to have belonged to this pre-Vedic Aryan *milieu*, who in their turn appear to have been the first Indo-Europeans to have come into direct

contact with the earlier Austric settlers of India {85, 169-174-I}. The names Gangā {169-I}, Kosala, Anga, Vanga, Kalinga [Przyluski, J., *PA&PD*, pp. 63, 72, 74, 81], Assam [Kakati, B. K., *Assamese-Its Formation & Development*, Gauhati, 1941, pp. 2-3], etc., have etymologically been shown to be of Austric derivation. It points out that they were earlier inhabited by the Austric-speakers of the Indo-Pacific community who gave these names to their areas of their settlement.

340-I. The sequence of the entry of various Indo-Pacific (mainly Austric) and Indo-Atlantic (Middle Eastern including the Indo-European or Aryan) cultures into India may tentatively be drawn as under :—

	INDO-ATLANTIC (*Middle East*)	**INDIA** (*Meeting-place of two communities*)	**INDO-PACIFIC** (*S. E. Asia*)
(1)	← Introduction of incipient cultivation ←	——— ——— ———	Pre-Lithic Wave (Archaic)
(2)	→ *Microlithic horticulthrists* cultivating millets and herding goats and sheeps and later having a rock-art : spreads from Middle East to India where their eastward movement was checked in the Gangetic Delta	——— ——— ——— →	
(3)	← ——— ——— ——— ———	In India, particularly in Karnataka Rounded-butt axe changes for some unknown reason into Pointed-butt polished axe and then spreads westwards to Mid. East and Europe. ←	Neolithic Celt Wave {Rounded-butt polished axe 101-I} with the pig
(4)	→ Early chalcolithic village cultures of Ubaid-Sialk III-Hissar II-Rana-ghundai I (domestic horse present, so suspected to be Aryan) horizon {83-I}	——— →	Eastward move checked in Gangetic Delta
(5)	→ Chalcolithic Urban Revolution together with ziggurat-complex and aristocracy spreads from the Middle East to India, but it could not penetrate the Indo-Burman border hills and therefore instead of taking the land-route across these hills, it reached Southeast Asia from South India by the sea. In India it was bifurcated into the Indus Civilization on one hand; and the Peninsular Protohistoric Civilization {Rana-gundai II-Nagda I-Maheshwar III-Prakasha I-Eran I-Bahal I-Nasik I-Maski I-Brahmagiri I-Utnur IB Horizon, 83-I, c. 2300-1000 BC}. It represents the pre-Vedic (Puranic) Aryan continuum in India.	——— →	
(6)	——→ ——→ ——→	Painted Grey Ware (Vedic Aryans) ——→	
(7)		←—— ←——	←—— Shouldered-Hoe Wave



THE SARASVATI BASIN AS THE MEETING-PLACE OF THE INDO-PACIFIC AND THE INDO-ATLANTIC COMMUNITIES.

The crossing gave rise to the development of the first synthetic and international civilization of the human history known generally as the Indian Civilization.

(facing p. 208)

(8) ⟶ Indo-European pastoral peoples { Abhiras, Sakas, Hunas, Gurjaras, Jats, etc., 123, 147, 312-I } entering Sarasvati basin after its evacuation by the Vedic people and then spreading to the pastures on the slopes of the Himalayas, the Vindhyas, the Sahyadris, the Nilgiris and the dry Deccan interior in Karnataka and Andhra { 122-I } ⟶

341-I. The pre-Vedic Aryan culture in India was an Indian extension of the Middle Eastern Urban Revolution. How did it pass from the non-Aryan Sumerians and Akkadians (early Babylonians) to the Indo-Aryans who introduced it into India, we do not know. One of the chief means of its introduction by the Indo-Aryans was that first an Austric or other non-Aryan tribal chief was initiated to Aryanism as a Kshatriya who then adopted an Indo-Aryan language and became a tributary of an Aryan king. He was then instructed the Rāja-dharma according to which he built a fortified capital, maintained a regular army, accepted the Brahmana as his priest, adviser and philosopher. Further details are discussed in the next chapter { 89-91-II }.

342-I. The term *ārya*, as we find it in the later Vedic literature, was applied to the one who believed in the *varṇāśrama* social system under the supremacy of the Vedic priest. This was a compromise between the two Aryan cultures in India. The āśrama institution, unknown to the Rigveda, belonged essentially to the pre-Vedic Aryan Civilization. The Aryans belonging to the Old World Western Basic or the Indo-Atlantic community { 262-A, A, II } first figure in this sequence of the two Old World basic populations in the 4th west-east wave during the 4th mill. BC, though in the New World their linguistic influence on the American Indian languages is traceable as early as 15000 BP { 5, 203, 271-I }, suggesting their still earlier presence somewhere in Asia.

343-I. The Aryans appear in this wave as an early chalcolithic rural folk of equestrian peasant-villagers of the Rana ghundai I { 45, 46, 77, 80-I, Fn. 16 } culture of the Zhob valley from the direction of the Helmand depression being in readiness to enter the Indo-Sarasvati Plain where they were to be found later very probably as the people of the Zhob-Amri-Kot-Diji-Kalibaggan I cultural horizon. They were at this stage the plough-cultivators or the Āryas in the original sense of the term { Fn 50, 316-7, 325, 330-I }. We do not know who were the people who developed the hybrid wheat variety *Triticum vulgare* { bread wheat, 31-32-I, } found at Mohenjodaro and chalcolithic Navda Toli on the Narmada, and in Iraq in c. 3000 BC. "Bread wheat, or *T. vulgare*", writes W. van Royen, "probably originated in southern Afghanistan, northwestern India, and adjacent portions of Iran, and spread from there all over the world suitable for wheat production" [*The Agricultural Resources of the World*, Univ. of Maryland, U. S. A., 1954, p. 27]. The humped cattle (*zebu*) too, which is distinctively Indian and accurs in the art of the chalcolithic peasant cultures of Baluchistan and the Indus valley as well as that of other parts of India, poses a similar question [Hermanns, M., 'Were Animals were first domesticated and bred in India', *JAS Bom*, NS, XXVII, 2, 1952, pp. 143-7; Koppers, W, and Jungblut, L., 'The Water Buffalow and the Zebu in Central India,' *Anthropos*, XXXVII-XL, 1942-8, p. 651, etc.]. The reference to these two facts connected with the early plough-cultivation and cattle-domestication in India does not imply that the author is inclined to associate them with the Aryans in India. Some earlier or other contemporary peoples may also have developed

them. These apparently Aryan peasant-villagers undergoing some modifications in their technology, economy, society, culture and language, as they may have come in contact of other peoples in the course of their movements, for instance, the Indo-Pacific makers of celts and a spheroid hand-made pottery { 182-3, 185-95, 256-I }, were spread across the Indo-Sarasvati basin and the Narmada valley (the author is inclined to associate the basic phase of the Narmrda culture as encountered at Maheshwar, Navda Toli, Nagda, Prakasha, etc. to these people) to many parts of the Peninsular India lying as far south as Karnataka where they appeared as the chalcolithic people connected with the ash-mounds. In the course of this process some major readjustments should have resulted from the change from the wheat and the cattle to the rice and the buffalow and the elephant while crossing the Sarasvati in the course of their movements towards the east from the Indus valley and from the Narmada while proceeding towards the south (the earlier horticulturists of the 2nd Indo-Atlantic wave were not probably involved in such changes because they tended mainly the goats and the sheep and sowed millets which are not normally affected by such environmental changes as encountered in the semi-tropical and tropical regions). The Austrics, the Dravidians, the Tibeto-Burmans and the Indo-Aryans came together and began to fuse into a great institution. The mythology of this synthesis is preserved in the Tantras and the Puranas. As a result of this synthesis the worship of such animal-gods as the elephant, the buffalow, the boar, the alligator, the serpent, the hippopotamus, etc., seems to have entered the Aryan religion and in course of time they became vehicles of the Aryan and Aryo-Dravidian deities. It was probably on some such lines that the Agamic religion { 121-I, 57-II } of Hinduism must have developed among the pre-Vedic Aryans in India. It is this synthetic form of the religion which we find in the subsequent phase in the Indus civilization { 83,17.91,104-I, 2.280, Fn 13.15.79-II }. We have already taken note of the probability of the essentially Austric tribal and rural assembly of five elders as having been borrowed by the Aryan peasants (panchakshiti) from an earlier population of India { 85-I }. These pre-Vedic Aryan peasants appear to have maintained some contacts with other Indo-Atlantic peoples of the Middle East, like the Babylonians, the Egyptians and others, because in the next stage, as we shall see later, we find unmistakable presence of certain conspicous elements of the civilizations of these people; for example, the doctrine of non-violence, transmigration, the lotus symbol, the conception of the hall of justice, the Flood legend, the horrid hell, the sanctity of cow, etc. We may recall here the fact { 322-I } that consequent to the rise of the food-producing or the productive economy based mainly on seed cultivation, the damand for salt began to increase with the development of agriculture, and an exclusive class of caravan-traders in this commodity (later lavāṇā's or 'luhāṇās' of Punjab, Sind and Gujarat) came into being. They used to ply constantly between the sea-coast and the far-off interior and thus, together with the caravan-traders in other commodities, were chief means of information on places, peoples and events to the settle communities (*Bheru Jātaka* furnishes an instance of such salt-caravans).

344-I. In the next role under the 5th wave, the Indo-Atlantic community appears in India again as the Aryans now introducing to their own peasant peoples the Urban Revolution of the Middle Eastern pattern { 76, 153, 297, 332-I }, the elements of which had earlier reached Sumer (the earliest southern Iraq) from western India or the Paradise of the Sumerian tradition, Nituk or Dilmun { 76-I; 29, 92-106-II }, through the agency of an

Austric god who appeared as Enki-Ea in Babylonia and as Varuna in India. The change warranted an addition to the rural society of a new functional class of workers in urban crafts and institutions, and thus a lower order in the third class came into being which seem to have enjoyed a status like that of the higher Vellalas {39-II} durlug the pre-Vedic times. The new Aryan wave established city-states in the Gangetic valley which spread to the major portion of the subcontinent in course of time as the legend of Manu Vaivasvat and his ten sons inform us {68, 89-II}. The Urban Revolution, for the reasons still indistinct, bifurcated itself into two urban institutions in India, namely, the Indus Civilization, c. 2300-1700 BC, and the Peninsular (Chalcolithic or Protohistoric) Civilization, c. 2300-1000 BC {83,87,91,120,288 I, Fn 13,15;56,82-II} during the Bronze Age. They were based mainly on the earlier Aryan food-producing economy of plough-cultivation and dairying. Where the economy could yield more surples, for instance in the great alluvial plains, large cities like Moenjodaro, Harappa, and Mahishmati were developed; and where, particularly in the Peninsular India, the yields were comparatively lower, small cities and townships came into being. The roots of the Peninsular Civilization lay in the Zhob-Amri-Diji-Kalibaggan I complex and the Urban Revolution had spread with it right into the heart of the Dravidian South India even during the Bronze Age, as we can say in the light of evidence from Brahmagiri and Chandravalli [Krishna, M. H., "Prehistoric Deccan", Pres. Add., *Anthropology & Archaeology*, *Proc., Indian Science Congress*, Baroda, 1942; Wheeler, R. E. M., 'Brahmagiri & Chandravalli, 1947', AI, IV, 1947-8]. The sage Agatsya is credited with pioneering the Aryan socio-economic institutions [*Rām.*, XI; *Mhb.* Vana, 104-5; *Padma-p.*, Srishti-khanda, XIX; *Devi-Bhāgavata*, X,3.7] in the Dravidian-speaking South India and thus with the Aryanisation together with the Urban Revolution not only in that part of India but also in Southeast Asia.

345-I. If the high agricultural surpluses produced in the great alluvial plains of the Nile and the Euphrates could give rise to the Urban Revolution and then to its next stage the imperialism under the Era of Cyclical Conquests {116-I, 5}, there is no reason from the view-point of human ecology that why the better watered Indo-Brahmaputra Plain {152-4-I, Fn 29}, which also had developed the urban institutions in no way inferior to those of the Middle East, should fail to do so. "Just as Buddhas appear," writes A. L. Basham, "from time to time in the cosmic cycle to lead all living beings on the road to enlightenment, so do Universal emperors (Chakravartins) appear to conquer all Jambudvipa (ancient India) and rule prosperously and righteously. The concept of the Universal Emperor was also known to the Jainas, and in the Epics numerous kings of legend, such as Yudhishthira and Rāma, are said to have *digvijayins*, conquerors of all the four quarters" [*The Wonder that was India*, Bom., 1963, p. 83]. The *Mahābharata*, XII, 29, lists 14 chakravartins. Prithu {120, 313-4-I}, S'asibindu, Māndhāta, Bharata and others were noted imperialists. As regards the expansionist tendencies out of India, one of the main handicaps was that the elephant of the Indian army was unsuited for a military expedition to the Middle East on account of a different climate.

346-I. The unification of Upper and Lower Egypt into the Old Kingdom, 3200-2250 BC, in the Nile Valley; and the expansionistic activities of Sargon of Agade, 2371-2316 BC, in Babylonia, mark the beginning of the Era of Cyclical Conquests in the ancient Middle East and the Mediterranean lands which continued down to the Roman Empire, 146 BC-393 AD. "The economic interdependence of the florescent nations," writes

John J. Honigmann, "probably contributed an incentive for empire building....war came to play a focal role in the culture of Initial Conqests....In Egypt, Inital Conquests began with copper weapons but before the Old Empire came to an end, bronze had diffused from Mesopotamia and was in use by armies....In dynastic Ur there was a heavy and light infantry while other specialists drove ass-drawn chariots. For defense, cities became surrounded by monumental walls" [*The World of Man*, NY, 1959, p. 716]. These war-weapons and devices of the Middle Eastern army surrendered to the horse-drawn spoke wheeled light chariots {war-chariot, 108-II-I} of the Indo-Aryans. The Indic hold over the Middle East that lasted for some five centuries during the second millenium BC {71, 74, 107-15-I} seems to have been a mission, but a mission with a difference. We have noticed how benevolently the Kassites ruled Babylonia and the peasants and commoners enjoyed peace and prosperity and how Babylonian civilization and literature witnessed a period of renaissance under them {108-I}, together with the fact that how Akhnaten {III-I, 90-II} attempted to introduce the non-violence in its Aryan form or *ahimsā* in Egypt. Was it that somewhere among the Indo-Aryans was there arising the great bioethical principle of symbiotic mutualism between a being and a being in the phenomenon of life {326-I} and thus the aryanism was acquiring a new meaning ? We have already noted certain facts about an intial stage in this regard {114, 168, 162-67, 201-14-I}.

347-I. When other developments were taking place in regard to the shift in the meaning of the term ārya from the 'plough-cultivator' to the 'noble one' among the Vedic people in the Gangetic Doab, the term had indeed been developing an ethical meaning among the pre-Vedic Aryans of the area lying further east in the Gangetic valley, as becomes evident from such Buddhist terms as *ario aṭṭhangiko maggo* [*ārya-ashṭāngika-mārga*, i. e. right views, right aspirations, right speech, right conduct, right livelihood, right effort, right mindfulness, and right contemplation; Mahāvagga I, VI, 17, 47; Samyutta Nikāya V, xii 2; etc] and *chattāri ariya sachchāni* or the Four Āryan Truths [*duhkha*, *duhkha samudaya*, *duhkha-nirodha*, and *duhkha-nirodha-gāminī-pratipadā*, *ibid*.]. The foundation of Buddhism rested on the Buddha, dharma, sangha, ārya-śila, ārya-gñāna and ārya-vimukti [*Anguttara-nikāya*, *III*, Pali Text Soc., pp. 450-I]. Whereas the Vedic sacrificial institution was a Babylonian development of an essentially Aryan horse-cult belonging to the Agricultural Horizon of religion, the pre-Vedic Aryan religion {'Āgamic' 121-I} represented the earlier Animistic Horizon {63-I, 2} which had resulted from a fusion between the Austric and early Aryan religious observances and beliefs in which idolatry and ancestor-worship were already present. The religious heads were wandering ascetics and yogis called 'muni' in the Vedic literature [*Rig-veda*, X, 136, 2, 4-5.' *VI*, *II*, p. 167-8] and 'S'ramana' in the age of Mahavira and Buddha.

348-I. Vedic religion followed the Middle Eastern pattern in respects of the ritual, hymnology, priesthood, etc. {115-I, 2} in which Varuna-Enki was gradually gaining superiority but later began to loose field in favour of Indra, apparently an adaptation of the Asianic god of thunderbolt Teshup {115-I, 3}, who was conceived as fighting with a demon who seems to have become the Asura Vritra in the Rigveda. The Middle-Eastern-cum-Vedic religious complex could not develop a true monotheism and lacked, as a matter of fact, a real philosophical approach. But the pre-Vedic Aryan religion in the domain of which the Vedic people began to enter as soon as they left the Sarasvati basin in the sequel of its drying up {117, 131-I}, seems to have already attained these heights. The

elements of these pre-Vedic Aryan institutions began to influence the Vedic thought and practices from the period of the Rigveda onwards, as the addition of the first and the tenth manḍalas (books) demonstrate {316-I}. Such monotheistic developments as we trace in Purusha [*Rig-V*. X. 90], Hiraṇyagarbha [*ibid*. X. 121], etc., [*ibid*. X. 190], belong to the 10th manḍala. Man is first supposed to enter the realm of the king Yama[58] after the death in the 10th mandala, 14.8. It is again significant that the names of all the Puranic kings that occur in the Rigveda as 'seers' or Vedic hymn-makers [97-II] belong to this manḍala. It appears to be a myth that such early rulers as Prithi Vainya and Manu were the hymn-makers because some form of the Old Indo-Aryan earlier than that of the Rigveda in which *l* must have been more prominent instead of *r* {321.22-I} as they ruled in the Gangetic valley, would have been current during their times.

349-I. "Certain Rigvedic hymns (X. 129, etc.)," writes V. M. Apte, "express doubt concerning the efficacy of the priestly cult....the hymns of the Atharvaveda and some portions of the Yajurveda *Saṁhitas* carry on the tradition of these sceptics and doubters.... Not only in the Upanishads but also in the Brahmanas, there is clear evidence of the fact that kings and warriors shared the honours of the intellectual and literary harvest of these days with the Brahmanas who had to go to them very often for instruction {331-I}. Nay, even women and people of doubtful parentage took part in intellectual life....It was probably these non-priestly {non-Vedic} circles opposed to the Brahmanic {Vedic} way of works (Karma-marga) that formed the chief recruiting ground for forest hermits and wandering ascetics {munis, śramaṇas, etc.}, who kept aloof from the sacrificial cermonial of the Brahmanas....and followed the 'way of knowledge' (Jñāna-mārga). Buddhism represents, very probably, one fruit of such protestant activity" [*VA*. p. 493].

350-I. In the next stage of the development of the Vedic literature, we come across the *Atharva-veda* {319-I}, which apparently presents a picture of the non-Vedic cults of Animistic Horizon practised probably by the newly entering peoples into the newly added fourth or the S'ūdra-varṇa from the pre-Vedic Aryan, Austric or Dravidian communities. Some new elements which can hardly be accounted for a natural development of the Vedic culture also appear in the Atharva-veda, for instance, the glorification of the ox and the bull [X. 5.], the figures of which occur on the Indus seals, and of the cow; Mother Earth [XII. 1], the horrid Nāraka-loka [II. 14; V 19] in contrast to the Svarga-loka [XII. 4]; the terms *Brahman*, *tapas*, *asat*, etc. The Vedic conception of the other-world followed again the Babylonian pattern, whereas under the name Narka-loka which is elaborated in the Puranas [*Vishnu* p. II. 214, a place of torture to which the souls of the wicked are sent] the Indian unmistakably demonstrates the Egyptian influence according to which the soul of the dead goes to the Hall of Osiris for judgement and for punishment or reward according to his deeds.[59]

58.—The Vedic dialogue between Yama and Yami appears to suggest symbolically that the Aryans desisted from the brother-sister marriage which prevailed in ancient Egypt and Babylonia. The Dialogue appears to be an Indian adaptation of some Egyptain legend.

59.—"The Kingdom of Osiris was situated in Sekhet-hetep.....In one part of this kingdom was placed the Judgment Hall of Osiris, and there sat the great judge of the dead. The soul of every man was brought there and weighed in the Great Balance in his

[Contd. on page 214.]

351–I. In the *Brāhmaṇas* the occurrence of the Flood Legend [*Śatapatha* I. 8. I] of obviously Babylonian derivation {9. 92–II} is of significant importance. There is distinct *Purāṇa* (*Matsya*) on this theme, and the legend occurs in all the *Puranas* and the epic *Mahābhārata* {10–II} in which Varuna-Enki, the saviour of the mankind who was symbolized by the fish both in India {107. 108–II} and Babylonia, is elevated to the status of the First Incarnation of Vishṇu as the Matsyâvatāra out of his ten (Fish, Tortoise, Ocean-Churning, Half-Lion Half-Man, Dwarf or Trivikrama, Paraśu-rāma, Rāma Dāśarathi, Kṛishṇa, Buddha, and the yet to come Kalki) incarnations.

It appears surprising how it is that the Flood Legend of the Babylonian origin has spread practically all over the world. "The foregoing survey of diluvial traditions," writes Sir James G. Frazer, who first undertook a comparative study of the Flood Legend, "suffices to prove that this type of story has been wildly diffused throughout the world... To begin with Asia, we have found examples of them in Babylonia, Palestine, Syria, Phrygia, ancient and modern {tribal} India, Burma, Cochin China, the Malay Peninsula, and Kamtchatka. Roughly speaking therefore, the traditions prevail in Southern Asia, and are conspicuously absent from Eastern (China, Japan, etc.), Central, Northern Asia. .... In Europe native diluvial traditions are much rarer than in Asia, but they occurred in ancient Greece, and have been reported in Wales, and among the Lithuanians, the Gipsies of Transylvania, and the Voguls of Eastern Russia....In Africa, including Egypt, native legends of a great flood are conspicuously absent....In Indian Archipelago we find legends of a great flood in the large islands of Sumatra, Borneo, and Celebes, and among the lesser islands in Nias, Engano, Ceram, Rotti, and Flores. Stories of same sort are told by the native tribes of the Philippine Islands and Formosa, and by isolated Andaman Islanders. In the vast islands of New Guinea and Australia we meet with some stories of a great flood, and legends of the same sort occur in the fringe of smaller islands known as Melanesia. ....Passing still eastward out into Pacific, we discover diluvial traditions widely spread among the Polynesians .... Among the Micronesians a flood legend has been recorded in the Pelew Islands. In America, South, Central and North, diluvial traditions are very

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[Contd. from page 213.]

presence, by Thoth, the scribe of the gods. The soul was weighed against the feather, symbolic of righteousness (maāt). Before the weighing took place the deceased was obliged to pass along the Hall of Osiris, and to make the Nagative Confession before 42 Assessors of the Dead. Each of these beings asked him the question: 'Hast thou committed such and such a sin?' There were altogether 42 sins. When the soul and the feather balanced exactly Thoth announced the fact to the gods and then the soul was taken by Horus into the presence of Osiris, who rewarded him according to his deeds. If the soul failed to counterbalance the feather, it was either cast to an animal-monster Am-mit ('Eater of the Dead'), which was part crocodile, part lion, and part hippopotamus, or was dragged to the block of doom, where such souls were beheaded. Sometimes they were ceased upon by the Watchers who carried slaughtering knives, and have cruel fingers, and cut the dead into pieces which were thrown into pits of fire. Here at one corner sat a monster who swallowed hearts and ate up the dead and whose name was the 'Devourer for Millions of Years" [*A Guide to the Egyptian Collection in the British Museum*, 1909, po. 140–40].

widely spread. They have been found from Terra del Fuego in the south to Alaska in the north, and in both continents from east to west. Nor do they occur among the Indian tribes only; but examples of them have been reported among the Eskimo from Alaska on the west to Greenland on the east....we have still to enquire, whether the Babylonian or Sumerian legend which is certainly by far the oldest of all diluvial traditions, may not be the one from which all the rest have been derived" [*Folk-Lore in the Old Testament*, NY. 1923, pp. 131-3].

352-I. The areal distribution of the Flood Legend coincides largely with the area of the diffusion of the ziggurat-complex and the establishment of aristocracy as the means of the introduction of the Urban Revolution in Southeast Asia, the Pacific Basin and the Americas. We have already noted that the inner human urges for exploration, creativeness and altruism often attain group or social proportions under appropriate ecological conditions. The author, therefore, maintains provisionally that during the period when the Urban institutions were developing in Babylonia, the Flood Legend had become such a popular epic of the people that when they set out to introduce the Urban Revolution, the Flood Legend too spread side by side to India and from there to the Pacific Basin and the Americas, where the story has survived to our own times. Both the Babylonians and the Egyptians were not good sailors and therefore they left the maritime trade and communications to other peoples. Under the circumstances, the introduction of ziggurat-complex and aristocracy as instruments of the Urban Revolution, together with the spread of the Flood Legend and humanitarianism as an Aryan institution must have taken place through the agency of India

THE MISSION OF URBAN REVOLUTION IN PRE-COLUMBIAN AMERICA.

352-I. The pre-Vedic Aryan mythology of the Puranas and the Tantras is full of the sea-lore. The conception of the Ocean-Churning reminds one of the agitating condition of the sea around an active volcanoe, a typically Pacific phenomenon, indeed. The seat of Nārāyaṇa in the ocean and the association of Pacific myth of the Great Cosmic Serpent as S'sha with this supreme deity of Hinduism, again bespeaks of a relationship between early India and the Pacific Basin, evidently through navigation. The find of cotton descended from an Indian variety in Peru at Huaca Prieta from the horizon carbon-dated c. 2500 BC. the period when it was present in India in the Indus civilization, furnishes indeed a strong archaeological evidence in support of this fact {164-I}. We have already taken note of recent archaeological and related facts in this respect {164-66-I}.

353-I. The malarious and densely forested Indo-Burman hill-ranges obstructed the further eastward passage by land of the Middle Eastern Urban Revolution and therefore it concentrated itself for some centuries on the East Coast of India in its preparations to reach the Southeast Asia and the Pacific by way of the sea. The Urban Revolution in this Dravidian form incorporated two more instruments of its propagation, viz., a Brahmanical-S'rāmanic religious complex based on non-violence or *ahimsā* and the doctrine of transmigration and karma; and the Indian epics the *Rāmāyaṇa*, the *Mahābhārata*, the *Story of Agastya* and the Buddhist scripture the *Dhammapada*. "The colonial Brahmanism," writes B. Ch. Chhabra, "expresses itself in three main forms: Saivism, Vishnuism and cult of Agastya" [*Expansion of Indo-Aryan Culture during Pallava Rule*, Delhi, 1965, pp. 76-9].

354-I. Early links between the Pacific lands, on one hand; and India and Asia, on the other, have earlier been mentioned { 165, 166, 169, 171, 192-I }. "The ancestors of the future occupants of the Pacific left," observes R. Shutler Jr., "following at least two routes. Through the Philippines into Micronesia { from China }, and through Indonesia into Melanesia { from India }. The wanderers arrived in the Marianas Island by 1500 BC, and Yap by 122 BC. Those who took Melanesian route arrived in New Caledonia by 847 BC, and Fiji by 46 BC. Eastern Poleynesia by 122 BC, and Eastern Island by AD 400....Polynesian pottery is obviously of Melanesian origin....presents the possibility that the initial occupation of Melanesia and Central Polynesia was by a group coming up through Melanesia" { evidently from the direction of Southeast Asia and India }. [" Peopling of the Pacific in the Light of Radiocarbon Dating ", *Asian Perspsctives*, V, 2, 1961, p. 211-2]. The *Jātaka* stories depicting the post-Mahābhārata Indian life { 114-I } and recent ethnohistorical and linguistic researches [Wallis, W. D., 'Classical & Indo-Iranian Analogies in Southeast Asia & Pacific Islands', *Culture in History*, NY, 1960, pp. 315-32] also point to commercial and cultural communications between the Aryans and the peoples of the Pacific during pre-Christian centuries.

354-I. The rise of aristocracy associated with the introduction of the Urban Revolution had also taken place in Polynesia and the Nuclear America { 201-I }. "The culture of the Polynesians", states Prof. Kenneth D. Emory of the University of Hawaii, "simple in its material equipment, was evolved socially, politically, and religiously far beyond what we would expect of a stone-age people. The heights they achieved in social graces when entertaining, in the imagery of their songs, in concepts of how the world came to be, and the political wisdom of their Chiefs, the skill of their experts in building and navigating ocean-going crafts, the energy they put into the worship of their gods, and some of the stone-monuments they have left behind have given an impression of participation in a higher civilization " [Native People of the Pacific ", *Geography of the Pacific*, ed. Freeman, O. W., NY, 1951, pp. 55-7]. "Among the Angami Nagas", writes H. J. Fleure, "Hutton noted four categories of other stone mounments. The *dahu* is a more or less rectangular pyramid of stones which can be used as a defence centre in a fight with another village. The pyramid appears to mark the burial place of ancestral chiefs and it is hold to be specially sacred. Hutton thinks that something of the nature of a large *dahu* was a feature of the great stone buildings at Tiahuanaco and Sacsahuaman in Peru Polynesian analogies with *dahu* and *tehuba* have been noticed by various observers ....Hutton notes that the syllable *hu* is associated with some kinds of buildings of great stones in south-east Asia, Polynesia, and Peru....Something like the { Peruvian } *kivāhū* occurs in south India, North Africa, and Etruscan Italy....Hutton asks whether we may not here heve one of the many examples from various parts of the world (Sanchi in India, the Parthenon at Athens, Stonehenge in Britain) of a scheme of wooden construction ....Henri Balfour long ago drew attention to some similarities between a *dahu* of the Angami Nagas and an *Ahu* of Eastern Island....so there may be a link between monuments of Polynesia and south-east Asia, doubtfully via weatern America" [*Times & Places*, Ox, 1956, pp. 286-9]: further readings for trant-Pacific contacts besides those mentioned 162-66-I; Lou, D. Wing-sou, 'Rain Worship among the Ancient Chinese and the Nahua-Maya Indians', *Bull. Inst. Etonology*, IV, 1957, Taiwan, pp. 31-102; Muller, Von W., 'Stufenpyrameden in Mexico und Kambodscha', *Paideuma*, VI (8), 1958, pp. 473-89; Schuster, C., 'Human Figures

with Spiral Limbs in Tropical America', *Miscellanea Paul Revet*, II, 1958, Universidal Nacional Autonoma de Mexico, pp. 549-61 : Garibay K. and Angel, M., 'Semejanza de algunas Conceptos Filosophicos de Las Cultures Indu if Nahuacl', *Cuadernos Americanos* XVIII, 2, 1959, Mexico, pp. 119-44, the authors point out similarities regarding the conception of time between Aztecs of Mexico and the Indians of the Upanishadic Period : Winning, H. von, 'Further Examples of Figuriness on Wheel from Mexico', *Ethnos*, I-II, 1960, Stockholm, pp. 63-72 : Estrada, E., and Meggers, Betty J., 'A Complex of Traits of probable Trans-Pacific Origin on the Coast of Ecuador,' *AA*, LXIII, 1961, pp. 913-39 : Kubler, G., 'Rival Approaches to American Antiquity,' *Three Regions of primitive Art*, II, 1961, NY : Barrau, J, ed., *Plants & the Migration of Pacific Peoples : A Symposium*, Honololu, 1963 : Heyerdahl, T., 'Plant Evidence for contacts with America before Columbus,' *Antiquity*, XXXVIII, 1664, pp. 120-33 : Brooks, R. R. Robert, 'Two Parallel Ancient Civilizations : *Span*, ND, April 1966, pp. 21-8 : Meggers, Betty J., 'Did Japanese Fishermen bring the Art of Pottery Making to Ecuador 5000 Years Ago' *Courier*, Par, May, 1967, pp. 12-13].

354-I. "In Nuclear America," writes G. R. Willey, "the city developed from the town and temple...... These cities were the nerve-centers of civilization. They were distinguished by great public buildings and the arts. Formal pantheons of deities were worshipped in the temples under the tutelage of organized priesthoods. Populations were divided into social classes. Trade was carried on in these cities, and science and writing were under the patronage of the leaders....In Nuclear America the town-and-temple community dates back to 800 BC. On the periphery of Nuclear America, Middle American town-life with its temple-mound-and-plaza complex, entered the Mississippi Valley sometime between AD 500 and 1000. Maize cultivation {201-2-I} was an established part of this complex "[*New World Prehistory*, Smithsonian, Wash. 1961, pp. 568-79]." Conquest and interbreeding, "states Prof. R. R. R. Brooks." mixed the genes cultures and led towards monotheism in religion in the form of Quetzalcoatl {235-I}......Both developed, by different routes, pyramidical architectural forms. Both created ornate sculpture. Both had *al fresco* painting {the zero, the lotus, the belief in the eternity of soul, transmigration, etc.}, astronomy, complex mathematics, calenders, decorated pottery, lost-wax metal casting, artistic textiles, planned cities, and a government in which the balance of power between the priestly theocracy and the military autocracy shifted with the fortunes of war and peace" ['Two Parallel Ancient Civilizations,' *Span*, Ap., 1966, pp., 23-4]. The god Quetzalcoalt who preached non-violence in ancient middle America and affinities between the Mexican and Çentral American architecture and sculpture and those of the Dravidian South India {166-I} are also among strong points showing a high probability of the Indians having shared in introducing the Urban Revolution in the Pacific and the Americas.[60]

355-I. All the civilizations of history as enumerated by Arnold J. Toynbee [*A Study of History*, Lon, 1946, pp. 15-34], Karl A. Wittfogel [*Oriental Despotisin*, New Haven, 1957, pp. 173-203, 238-69], Rushton Coulborn [*The Origin of Civilized Societies*, Princeton, 1959], and others, can be traced for their origin to two basic socio-economic world currents

60- The Peruvians and Bolivians of the South American Altiplano have first given the mankind the socialism and welfare state, in which, like the Tiwis of Australia, the teachers, the artists and craftsmen ranked the highest in the society, an ideal state which the 'civilized' societies have not yet succeeded to achieve.

of productive economy, the Indo-Pacific and the Indo-Atlantic, both based on two diverse stages of this economy: the horticulture of rice-maize-potato and fishing without animal-labour, dairying and rotary motion; matriarchal social system; on one hand: and the agriculture of wheat-barley together with dairying, animal-labour, rotary motion and a patriarchal organization, on the other, respectively {295-I}. All the civilizations that have flourished so far in the course of history have resulted from various interactions between these two basic world currents under varying ecological and other conditions.

356-I. It may appear that we have gone too far having, indeed, encircled the globe in our search for the points of the strategy of the Sarasvati to history: but, we could not help otherwise, because the horizons of history are now expanding and we hope to reach soon a better international appreciation of history. We are probably heading towards a stage in our researches, as anticipated by W. T. Strong, "The Time is coming when the rich ethnological and archaeological record of the New World can be compared in full detail and time perspective with similar records from Europe, Egypt, Mesopotamia India, China, and Siberia. When such comparative data are in hand the generalizations that will emerge may well revolutionize our concept of culture history and culture process over the millenia" [*Cross Sections of New World Prehistory*, Smithsonian Vol. 104, No. 2, p. 43].

357-I. Because of its strategic location at the cross-roads of mankind's two modes of productive economy, the Sarasvati must have contributed significantly in serving: (1) as an area of synthesis between the two basic world currents of human institutions; (2) as a shelter-zone for various incoming agricultural and pastoral Aryan waves {340-Is}; and lastly, (3) as an ideal habitat for the sages and learned institutions where major works of pre-Buddhist literature and philosophy of India were produced.

Such is the strategy of the Sarasvati to history.

II

AS ARCHAEOLOGY DEPICTS, DISTORTS AND DROPS

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1-II. There are people who still question the practical value of history. Without knowing what has happened in the past and what is the past experience gained in respect of a particular project, one can hardly be expected to prepare a dependable plan for its successful execution. The same holds good also for planning the future course of the human prosperity and peace. "Human culture", states Kroeber, "viewed as a whole and in its major manifestations broadly trace the limits within which the culture of human being has so far ranged, and at least indicate the foundations on which its development hereafter is likely to be reared. The same achievements", continues the eminent anthropologist, "represent the manifold and multiform values that human groups have been able to work out as they travelled the long road of their species and therewith were rendered capable of reworking their past deeds and experiences into the construction of designs for future living" (Kroeber A. L., *Anthropology*, NY. 1948, pp. 838-9).

OUR PRESENT HISTORY IS THE PARTIAL HISTORY OF PREDATORY AND PARASITIC CLASSES OF SOCIETY

2-II. The horizons of history are now expanding and with them is rising. Indeed, the historian higher and higher in stature, for it is he from whom both the philosopher and the social-scientist expect a dependable account of the past human process. But the historian, who has largely been indulging in compiling in the name of history the chronological and genealogical seqences of tenures and exploits of political personages and heroes, chronicles of wars, and annals of rising and falling empires and kingdoms has on his part, still to deliver goods.

3-II. History should, no doubt, be reconstructed for the sake of history, i. e, for the sake of truth. In this utalitarian age history, too, must serve a purpose if it aspires to survive. Hitler was certainly not first to have discovered the use of history as a stimulant to progress. The appeal to history has indeed saved many a communities from political calamities and have led many a peoples to victory. The ancients had instituted classes of professional chroniclers like the bards and minstrels, whose duty it was to compile genealogies and accounts of families, to maintain them from generation to generation, and to recite them at appropriate occasions. The bards were known in China before the minstrel Homer flourished in Greece in c. 9th cent. BC. The Eddas and the skaldic poems in Scandinavia were sung by professional reciters and the Welsh *bardd teulu* are familiar to us. The institution of bards and minstrels is found also among some of the African and Polynesian tribes.

4–II. These facts go a long way to contradict the view current among a class of historians that the ancient and the non-literate communities had no sense of history. May we ask were Moses, Homer and Virgil historians? Much more history covering such important events as the Food Production Revolution, the Urban Revolution and the Ferric Revolution had already passed than it has passed since the time of Herodotus (440 BC). Even that which has been written since the period of the Father of History is indeed the history of the predatory and parasitic classes in the name of history. It is not the history of man as a whole. It is partial indeed. Our 'critical' historiography has still to achieve a fair degree of objectivity and maturity. The historian of today is often officially expected under the threat of the punishment to distort the facts of history so as to conform to the tenets of given political philosophies.

INDIAN PROTOHISTORY AS DISTORTED BY THE BRITISH IMPERIALISM

5–II. Many an historians and archaeologists of some of the former Imperialist countries are known to have distorted and blurred in a large number of cases the history of the 'native' or 'subject' peoples for their own political ends. With a few exceptions, the majority of the works on the world history produced so far appear to lack in their contents a correct assessment of the role played by many an Indian, the Pacific, the African and the Asian communities in ancient times. The current practice of applying the Biblical and European Classical names of the persons and places to the Middle Eastern and Oriental history, instead of their correct forms as occurring in indigenous and original records, and some time superfluous emphasis on the role of the European Classical world in the world history, demonstrates how subjective and biassed a methodological approach we entertain even in this age of critical history. A just and unbiassed history of man has, indeed, still to come.

6–II. In 1806, James Mill, the father of the Utilitarianist philosopher began to work in London on his *History of British India*. He begins with an elaborate account of the Hindus and seeks to prove that the abject condition in which the English found them in the eighteenth century represents their normal condition throughout their history. He redicules the 'hypotheses of a high stage of civilisation' propounded by Sir William Jones and observes that India and its inhabilants, "Their laws and institutions" "as he writes" are such as could neither begin, nor exist, under any other than one of the rudest and weakest states of the human mind. As the manners, the arts and sciences of the ancient Hindus are entirly correspondent with the state of their laws and institutions, everything we *know* of the ancient state of Hindustan conspires to prove that it was rude" [Mill, James, *The History of British India*, 5 th ed, 1858, II, p. 109]"

Macaulay praised in glowing term Mills' History of India in the House of Commons as 'on the whole, the greatest historical work which has appeared in our language since that of Gibbon'. Mills' son, John Stuart Mill, the well-known philosopher of *Utilitarianism*, described it as 'one of the most instructive histories ever written' [HIP&C, p. 219]

"As we pass from 1850 to 1860" writes Holden Furber, "there is an increasing number of writers who are frankly imperialists as regards India and anti-imperialists as regards Canada, Australia, and New Zealand." ['The Theme of Imperialism & Colonialism in Modern Historical Writings on India.' *HIP&C*, pp. 339–40].

7-II. "Elphinstone's *History of India*," state R. C. Majumdar, "was a standard text-book in the examination of the Indian Civil Service and the Universities in India. The young Englishman formed their notions of the Hindus, over whom they ruled with iron hand, from a book which contains such passages as, "The most prominent vice of the Hindus is want of veracity, in which they outdo most nations even of the East '(M. Elphinstone, *The History of India*, 9th ed., 1916, p. 305). The third great English historian of India, V. A. Smith, writing at the beginning of the century, emphasized, "the inherent weakness of the greatest Asiatic armies when confronted with European skill and discipline" (V. A. Smith, *The Early History of India*, 2nd ed., Oxford, 1908, p. 109), and prophesied the envitable relapse of India into political chaos, which has been her normal condition except for rare intervals, "if the hands of the benevolent despotism which now holds her in its iron grasp should be withdrawn" (ibid, p. 330). Several other tendencies among European writers may be clearly noted....Even if positive evidence was being brought to light about the past greatness of the Hindus, there was a conscious and deliberate effort to minimize importance. This was sought to be done by various ways. One was to deny the antiquity of the Indian culture by suggesting the lowest possible (or even impossible) date for her literary works like the Vedas and Epics. Another method was to belittle this culture by suggesting that Indians borrowed most of their culture from the Greeks and where that appeared to have no basis, from the Assyrians, Babylonians, etc. Wherever there was the least similarity between Indian and foreign ideas, Indians were taken to be the borrowers. The Epics were supposed to be indebted to Homer's works, Indian drama, mathematics, philosophy and astronomy were derived from the Greeks, and even Krishna cult was derived from Christ. The very poor evidence on which such theses were boldly enunciated, even by learned scholars, demonstrated a prejudiced mind rather than bad logical deduction or inference....the European writers, with a few honourable exceptions, were guilty of this kind of partisan national spirit." [*HIP&C* pp. 419-20].

8-II. At the recommendation of the Royal Asiatic Society of Great Britain and Ireland, the 11th session of the Congress of Orientalists proposed in 1899 the formation of an Indian Exploration Fund for explorations, excavations and other researches in archaeology in India on the lines of the Egypt Exploration Fund (later Society), established in 1883 under which such eminent archaeologists as Sir Flinders Petrie were making epoch-making discoveries. But the British imperialism had its own ways, for instance, (1) that the subject people or the 'natives' must be kept befouled and studefied to the extent of fighting among themselves, (2) that they must feel that they are inferior racially and lower intellectually in comparison to their alien rulers and they have been humble and degraded a people since the dawn of their history; and that (3) they must be imparted an education which may cut off their progeny from its traditions and civilization and be taught to hate them and develop partiality for the foreign European Classical civilization, arts, literature, and institutions. Macaulay's policy of education for India (1805) was based on such principles. The British Empire in India was therefore concious enough not to allow the newly developing science of archaeology going into the hands of free scientists, Universities and other public centers of learning and research.

9-II. Great developments were meanwhile taking place in the fields of the Oriental learning, Egyptology and Assyriology. Unexpected links between the protohistoric India, on one hand; and the two cradles of the world civilization, the ancient Iraq (Babylonia & Assyria

and Egypt, on the other, were coming to light. Francis Lenormant demonstrated in 1864 that the word *mana* which occurs in the Rigveda VIII, 67, 2, denoting a definite quantity of gold, could be traced to Babylonia where the same term was employed for a weight—unit. In the same way, it became known that the old Babylonian name for muslin was *sindhu*. The stuff was simply called by the name of the country which exported it (Regozin, *Vedic India*, 1895, p. 306). Robert Brown showed that the system by which the Day of Brahmā was calculated in India resembled closely the astronomical system which obtained in Babylonia. In ancient Indian doctrine of the World's Ages or Yugas, we are forcibly reminded of the Euphratean ideas regarding space and time. In both the countries the measurements of time and space were arrived at by utilising the numerals 10 and 6. The twelve signs of the Zodiac have already been assigned to the Babylonian origin. The same holds good probably for the Indian and Sumerian conception of the universe. A. Weber (*Indische Stud.* I, 1846, p. 160), M. Muller (*Ancient Sanskrit Literature* I, 1859, p. 425), J. Muir (*Original Sanskrit Texts* I, 1812, pp. 181–46; II, 1874, p. 324), M. Williams (*Sans. Epic Poetry* 1883 p. 34), Z. A. Ragozin (*Vedic India*, 1895, pp. 335–48), displayed close resemblance between the story of the Deluge which occurs in the Satapatha-Brāhmaṇa I, 8, I (C. 1000 B.C.); Mahabharata, Vana-Parva, CLXL I; Matsya Purāṇa I; Vishnu Purana V, 10; Padma Purana, XXXVI; Bhāgvata Purana VIII, XII; etc., on one hand, and in Babylonia, in the Sumerian Epic of Gilgamesh (Before 2000 B. C.), the Babylonian, Assyrian and Hittite stories of the Great Flood and the Hebrew account of Noah's Ark in the Old Testament, on the other. So far as archaeological evidence is concerned, pieces of Indian teak were found in the ruins of the Ur of the Chaldees at the Al Maqayyar of the time of king Ur-Bagas (Sayce, *Hibbert Lectures*, 1887, pp. 18, 136-7). It was the first indication of a commercial contact between India and Sumer.

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61 – Among the subsequent discoveries and researches the most important were the archaeological evidence of the existence of the Aryan kingdoms and principalities in Iraq, Asia Minor, Palestine, Egypt and Crete during the second millenium BC as we have already seen {107-116-I, 'Indic Princes in the Middle Eastern Politics,}. A.C. Coomarswami referred to the striking analogies between the art-motifs of ancient India and Western Asia, particularly in connection with the animal style and various features of architecture: the representation on the Babylonian seals of dragons with serpentine bodies and human beasts like the Indian Nagas; the cult of water connected with the symbol of flowing vase in Babylonia and the *purṇaghaṭa* or the Vase of Plenty in India [Coomarswami, A. C., *History of Indian & Indonesian Art*, 1927]. The French archaeologist C. L. Fabri has sought to estimate the force of ancient Iraq in the style and technique of the artists of Bhārhut stupa through a comparative study of such details as those of hair-dress, ornament, and costume ("Mesopatamian & Early Indian Art: Comparisons", Etudes d'orientalisme, *publiées par le Musée a la mémoire de Raymonde Linossier, I, 1932*); as well as the symbols, gods standing on animals, the heaven-bird and the earth-serpent, the serpent and the savior, the pre-Mauryan mother-goddess figure from Lauṛiya-Nandangarh, the winged divinities occuring in the *toranas* at Sanchi, the winged lions also at Sanchi, etc., etc. (Zimmer, H., *The Art of Indian Asia Its Mythologies & Transformations*, I, 1955, pp. 35–36, 42, 46–47, 61–9 159, 241 & 349) W. F. Albright and P. E. Dumont pointed out 'Parallels between Indic and Babylonian

[Contd. on page 221]

10-II. All this was alarming enough. In a speach Lord Curzon, Viceroy of India (1899-1904), delivered before the Asiatic Society at Calcutta, stated that it was an imperial obligation to India to uncover its past by explorations and excavations and to preserve its monuments. In 1902 a Director-General of Archaeology in India was oppointed for the purpose and thus, going against the precedent which did not obtain even in Britain, the British Government in India monopolised the revealing India's past through archaeology. It was and is still a challenge to free scientific researches in this discipline all the world over. Even in Britain the Government concerns itself mainly with the conservation of monuments through an Inspectorate of Ancient Monuments and Historic Buildings, the Ministry of Work, and the researches in archaeology through explorations, excavations, publications, etc. are left to the Universities and learned bodies in interest of science. Meanwhile in the Middle East, the British School of Archaeology in Jerusalem, the Egyption Exploration Society, the French Mission Archélogique in Cairo, the British Museum, the American School of Oriental Research, the Deutsche Orient-Gesellschaft, the Universities of Chicago, Michigan and Pennsylvania, the Field Museum of Natural History, Chicago, etc., etc., produced marvellous results carrying back the Historic period of the region to 3000 B.C. whereas in India where the Indus Civilization is a chance-discovery, the period still begins with the Buddha (C. 566-486 BC) and the State-controlled Indian archaeology has indeed failed to produce a single Indian archaeologist of international repute in the course of over a century of its existence [Daniel, G. E., *A Hundred Years of Archaeology*, Lon. 1950: Peake, H. & Fleure, H. J., *Times & Places*, Ox. 1956: Ceram, C. W., *A Picture History of Archaeology*, Lon. 1958; Cottrell, L., *The Concise Encyclopaedia of Archaeology*, Lon. 1960: Brion, M., *The World of Archaeology–India, China & America*, Lon. 1961: Hawkes, J., *The World of Archaeology* two vols., Lon. 1963: etc.]

[Fn. 61 contd. from p. 220]

Sacrificial Ritual' [*JAOS*, 54 1934]. Amrit Pandya demonstrated how the Asuras of the Vedic literature were identifiable with the Assurus or the Assysians on more than one grounds showing a striking analogy between the Assyrian account of Asur-Bani-Pal and Asura Bāṇa of the Harivamsa-purāna legend of the princess Ushā and Aniruddha and identifying the Assyrian capital Nineveh with Soṇitapura of the story on the basis of ancient geographical accounts that locate the city beyond Susa, the Elamite capital. He pointed out further a possibility of hostilities and matrimonial relationship having been between the Assyrians and the Yādavas of Dwarka ['Assyria & Gujarat', *JGRS*, VII, 1943, 'Some Ancient Cities of Iraq in Early Indian Literature: Links between Aryan India & Babylonia', *VVRB*, I, 1957]. Amrit Pandya next tried to show how the Austric god of the sea developed into the Puranic Varuṇa in pre-Vedic India and into Ea (Enki) in Babylonia and the two fused subsequently into the Vedic Varuṇa [*Varuna, the god of the Sea*, 1945, cyclostyled]. Pandya later attempted to display a parallelism between the Puranic story of the princess Sāvitri and Satyavān and the Assyrian legend of the goddess Ishtar's descent to the land of the dead ['Sāvitri Upākhyāna: An Aryo-Indian Parallel of the Assyrian Legend of Ishtar's Descent to the Nether World', *VVRB*, I, 2, 1958]. Luristan bronze quiver-plates of c. 8-7th cent. BC. found at Surkh-i-Dum recently depicts certain figures which have been identified as of the Vedic deities Mitra, Varuṇa, the Maruts and the Nāsatya twins [Phillips, E.D. 'The Peoples of the Highland: the Vanished Cultures of Luristan, Mannai and Urartu', *Vanished Civilizations*, Lon., 1963, pp. 227-33].

11-II. It does not suffice for an archaeologist just to explore and excavate the vestiges of ancient settlements; to describe the discovered tools, weapons, ornaments and pottery; and to read inscriptions. The archaeologist must have, in addition, an insight into the culture of the people of the area of archaeological sites; their ancient and folk languages, literature, arts, historical traditions, religion, social institutions and their pre-industrial technology, economy and anthropology; as well as the geology, geograpey, natural resources, flora and fauna of the area concerned, so that he may do the full justice to the science in the course of his processing and interpreting the archaeological data at his disposal with a view to be of real help, in his turn, to the historian. The two outstanding figures of the imperial Indian archaeology, John Hubert Marshall (in service 1902-34) and R. E. Mortimer Wheeler (1944-48) were indeed eminent figures in the world of the Classical and British archaeology, but whether they fulfilled the above requirements in regard to the archaeology in India appears to be doubtful in the light of the manner of their treatment to the data on the pre-Buddhist or Protohistoric India and their writings on these subjects.

12-II. Some time before 1872, one Major Clark had found a stone seal with a figure of bull and an inscription in an unknown pictographic writing at Harappa (Haḷappā) in the Punjab, which Alexander Cunningham obtained a year later and discovered more seals at that place [*ASR*, V, 1875, p. 108]. Cunningham was led to postulate that the Brahmi alphabet originated from this indigenons script, instead of from a Semitic writing of Southwest Asia [*Corpus Inscriptionum Indicarum*, I, p. 52]. In this respect he was subsequently supported by S. Langdon {18-II}.

13-II. The Archaeological Survey of India instituted under Marshall evinced no interest in the Indian archaeology of the protohistoric (Indian protohistory from the proto-Buddhist times back to the oldest traceable relics of the food-producing communities) and prehistoric (Indian prehistory from the beginnings of the food-producers' times back to the origin of the mankind) stages, for it was held to be the job of geologists and anthropologists, like Valentine Ball, W. T. Blanford, R. B. Foote, J. C. Brown, J. Cockburn, P. N. Bose, R. Lydekker, A. H. Longhurst, T. J. Newbold, W. Theobold, T. Oldham, H. Rivett-Carnac, and others [Dasgupta, H. C. *Bibliography of Prehistoric Indian Antiquities*, 1931, Cal.]. H. Hargreaves of the Archaeological Survey inspected Harappa in 1914 in view of earlier finds by Cunningham {11-II} and suggested to conduct excavations, which were undertaken not less than seven years later in 1921 [*Ann. Rep. Superintendent*, *Arch. Surv.*, *Hindu & Buddhist Monuments, Northern Circle. 1921*]. The find of chert (stone) blades, in association with a few pictographic seals of the above type, and painted pottery established a pre-Buddhist antiquity for these relics. In the next year another officer of the Survey, Rakhal Das Banerji, discoverd similar antiquities from a stupa-perched tell Mohenjo-Daro (Moen-jo-Jhero), close to the Indus, near Larkhana, in Sind [*Ann. Rep.*, *Arch. Surv.*, *1922-23*, p. 103]. Marshall published an account of the relics in the *Illustrated London News*, September 20, 1924. A. H. Sayce, Professor of Assyriology at Oxford, pointed out close resemblances between the relics from the Indus valley and Sumer [*ILN*, Sept. 27, 1924]. C. J. Gadd, Assistant Keeper, Egyptian & Assyrian Antiquities, British Museum, London, and Sidney Smith, Keeper, published a joint article pointing out further similarities between these objects [*ILN*, Oct. 4, 1924]. The discovery of an Indus seal with a line of pictographs at Kish in Iraq by E. J. H. Mackay in a stratum dateable to the third millenium BC., established the antiquity of the Indus valley relics as belonging to the Chalcolithic period during which stone and copper-bronze were employed side by side ["Sumerian Connection with Ancient India", *J. Royal Asiatic Soc.*,1925].

14-II. The news of the discovery of an urban protohistoric civilization in India with sumerian affinities, unsuspected because the contents of the pre-Buddhist Vedic literature depicts a simple rural life in northern India for that period, shocked the world of archaeology and history with great surprise. "Hitherto India" wrote Marshall, "has almost universally been regarded as one of the younger countries of the world: no mounments of note were known to exist of an earlier date than the third century B.C., when Greece had already passed her zenith and when the mighty empires of Mosopotamia and Egypt had been all but forgotten. Now, at a single bound, we have taken our knowledge of Indian civilization some 3,000 years earlier and even before that the peoples of the Punjab and Sind were living in wall-built cities" (*Ann. Rep. Arch. Surv. India*, 1923-24, p. 47).

The universal pressure compelled the authorities in the British India to undertake systematic excavations at Mohenjodero and Harappa and Marshall was for this purpose given the assistance of an expert of the Middle Eastern Archaeology equally uninitiated to Indian archaeology or Indology and Indian cultural anthropology by name E. J. H. Mackay, who had earlier assisted Stephen Langdon in the excavations at Kish (1925) and Kidnun or Jemdet Nasr (1926) [Pallis, A. S., *The Antiquity of Iraq: A Handbook of Assyriology*, 1956, Copenhagen, pp. 326, 371].

15-II. The question that arose in the sequel was that who were the authors of the Indus Civilization, the Dravidians or the Indo-European Aryans? These are ethnolinguistic terms for which the architecture, sculpture, and pottery or jewellery from both Harappa and and Mohenjodero had no answer to give. The language only could provide a positive answer, but unfortunately it lay sealed in the ideographic writing of the Indus seals.

16-II. "The peculiar difficulty", observes C. F. Gadd, "in the way of decipherment (of the Indus script) is the complete lack of exterior evidence. The finds in the Indus valley have been the first revealers of an Indian civilization of high antiquity. What may have been the race and language of this people is a question of conjecture. We must end where we began, with the hope that Mesopotamia, which has already revealed so infinitely much of ancient history, here also will not fail. The appearance at Ur of an 'Indus' seal with a cuneiform inscription is full of hope, its three signs are all, unluckily, indistinct, but the reading is perhaps *sak-ku-shi* or ka-la-shi (Fn. *ka-ku-w*, equally possible, might be compared to such names *kakia*, already known as used east to Tigris and in Asia Minor), probably a name indeed, but whether characteristic of the Indus population we do not know. "Next, can anything be found to which a conjectural meaning may be attached? Once more, as in settling the direction of the writing, let us appeal to Harappā H 173. Here the first (top) line may be supposed to represent a name ending with the very common CCXXXVIII, which indeed, wherever it occurs, seems nearly always to end a word. The second (side) line is the fairly common group [sign] ||| [sign]: the third (bottom) line may be another name: it is not dissimilar in fact, to I. 218, which elsewhere stands alone. The next conjecture, then, will be that this whole inscription signifies 'M son of N', and consequently that [sign] ||| [sign] = 'son'. If now we boldly act upon the general assumption (c) *supra*, we shall substitute for 'son' the Sanskrit word *putra* (Fn. For the present purpose it makes no difference that in Sanskrit the form used is 'N's son M', not 'M son of N'.). Of the three signs in this group we can treat the first and last as doubtful, but the middle consists of

three strokes, and presumably represents simply the number three. If we take again the Sanskrit world for that number, *tri*, an interesting result is obtained :—



son | X — *tr(i)* — y
| pu — tr — a

From which these values would be ascertained :-

ψ = p(u), ||| = tr(i), ⍋ = a

Could these be established it would follow that the principle of acrophony [the use of a word-sign to represent the first consonant of the name of the object] had some application in this writing, and further that the not uncommon examples of inscriptions ending with the above group would be patronymics. Gadd arrived at the following provisional results :—

(a) That the writing is, at least in part, syllabic.

(b) That the seal-inscriptions are, in general names.

(c) That these names belong to an ancient Indo-Aryan language."

(Gadd, C. F., Mohenjo-dero & Indus Civi., II, 1931, p. 413-14).

17-II. Langdon's study of the Indus script led him to support Cunningham's view that the Brahmi alphabet employed for the ancient Indo-Aryan languages had descended from it. He argued therefore that the Indo-Aryans must have come into a direct contact of the Indus civilization for this process and in that case the antiquity of the presence of the Aryans in India goes back to a period earlier than 1500 BC. as is hitherto held by Indologists [Langdon, S., 'The Indus Script', MIC, II, p. 432].

Before proceeding further, we need discussing India's traditional early history.

18-II. The Indian population forming about one-sixth of the whole humanity comprises four major ethnolinguistic divisions, viz., the Austrics or the speakers of the Austric family of languages { 169-175-I, Fn 32 }; the Dravidians or, as the term means, the speakers of Dravidian family of languages; the Tibeto-Burman speakers { 250-I } and the Indo-Europeans { not necessarily the *Aryans*, because in a later stage the term stood for a way of *living*, irrespective of language}, as we know from the Manusmriti, X, 45, 'All peoples who are outside the castes born of the head, the arm, the thigh and the foot of Brahmā whether they speak the Aryan or the Mlechchha languages are Dasyus. 317-I }, the speakers of the Indo-European linguistic family { 271-I }. They represent, respectively, about 2.22.1 and 75 % of the present Indian popalation. Out of these the first and third have hardly any written literature of antiquity, because their economy and environment did not permit them to develop the urban life, of which the writing forms one of the characteristics {228-I.3; Fn. 34}.

19-II. The Dravidian is an isolated family of languages found restricted mainly to the South India and the northern Ceylon with a few outliers in the hilly middle India and the habitat of the Brahuis in the far off Sarawan and Jhalawan tracts of the Kalat State in the central Baluchistan, wherein lie such important chalcolithic tells as Nāl, Mehi, Toji, etc. [Hargreaves, H., *Excavations in Baluchistan*, Cal, 1925; Stein, A., *An Archaeological Tour in Gedrosia*, Cal, 1931, etc.], belonging to the Quetta-Amri-Nal group of the essentially Iranian buff wares [Piggot, S., 'The Chronoloy of Prehistoric North-West India', AI, 1, 1966.]

dating back to pre-Indus times, and recently discovered Edith Shahr which in its earlier phase, the Complex A, belongs to the Kulli culture [Bacon, E., 'Bridge to the Ancient East', *Vanished Civilizations*, 1963,pp. 273-4], have been found in the Brahui country.

20-II. The following classification of the Dravidian languages follows M. Andronov's scheme [*Indo-Iranian Journal*, VII, 2-3, 1964, p. 170]:—

- Proto-Dravidian
  - Southern Group
    - Tamil (Madras)
    - Malāyāḷam (Keraḷa State)
    - Kota (the Nilgiri Hills)
    - Toda (the Nilgiri Hills)
    - Kannada (Mysore State)
    - Kodagu (Coorg)
    - Tulu (a part of South Kanara)
    - Telugu (Andhra State)
  - Central Group
    - Kolāmi (Vidarbh or the Berars)
    - Naiki (Chanda-Bastar, M, P.)
    - Parji (N. Andhra)
    - Gadaba (N. Andhra)
    - Goṇḍi (the Gonds of the Satpura plateau & Baster, M. P.)
    - Konda (Andhra)
    - Kui (the Khond tribe of Orissa)
    - Kuvi (Andhra)
  - Northern Group
    - Kurukh (the Orāon tribe of Bihar)
    - Malto (the Maler tribe in the Rajmahal hills in Bengal-Bihar)
    - Brahui (central highlands of Baluchistan)

The cradle of the Dravidians and the phenomenon of their presence in South India since time immemorial where they developed a higher stage of urban civilization and introduced the Urban Revolution in the Southeast Asian sector of the Indo-Pacific realm in the course of their diffussion of Aryanization, are still moot questions. The Sumerian pattern of the institition of the temple in which the Urban Revolution was cradled still survives among them. If the ancient Mexican and Central Amerian urban architecture and sculpture have a closer relationship with anything in the world, it is indeed the Dravidian architecture and sculpture. The implementation of the doctrine of ahiṃsā (non-violence) first began among them on a mass-scale and it was through such Dravidian saints as Ādya S'ankaracharya, Rāmānuja, Mādhavāchārya, Vallabhāchārya, and many others, that it was spread to Northern India. The Dravidian South India has been the greatest stronghold of the Hinduism, where it occurs in purer form than anywhere else. P. W. Schmidt has pointed out some remarkable connections between the Dravidian and the languages of Australia (*Die Sprachfamilien & Sprachenkreise der Erde*, 1936, p. 121, etc.), on one hand; and L. Hamburger has recently

shown certain basic features apparently common to the Dravidian and the Bantu languages of Africa ['Indians in Africa', *Man*, LVI, Feler., 1956], on the other. The Dravidians, like the Austrics and Tibeto-Burmans, belonging to the Indo-Pacific community, have mainly been the rice-eating and paddy-growing people. The food-habits, however, may change as the Vedic people had to do on entering the Gangetic Doab [321-I], but the facts that the Dravidian society had formerly a matrilineal descent, which still survives in Kerala [Ehrenfels B.O.R., *Mother-Right in India*, Hyderabad, 1941, pp. 43-71] to an extent. That the aboriginal Dravidian tribes do not, unlike the Indo-Atlantic community, use a stone or metal industry and manufacture their tools and weapons from bamboo, wood, horn, etc., is a factor that relate them more with the eastern Austrics, rather than the western Indo-Europeans, the Hamito-Semites and others. The wide chronological gap between the megaliths of Europe built in the course of 3500-1000 BC [Daniel, G. E., *The Megalith Builders of Western Europe*, Penguin, 1963, p. 145, carbon-dates; Childe, G. V., 'Megaliths', *AI*, 4, 1947-8, pp. 5-13], on one hand; and those of South India [Srinivasan, K. R., 'The Megalithic Burials & Urn-Fields of South India in the light of Tamil Literature & Tradition; AI, 2, 1946, pp. 9-16; Wheeler, R.E.M., 'Brahmagiri & Chandravalli 1947', Append. C & D, *AI*, 4, 1947-8, pp. 300-7; Krishnaswamy, V. D., 'Megalithic Type of South India', *AI* 5, 1949, pp. 35-45; etc.] dated c. 200 BC-AD 100, on the other, preclude the possibitity of an immigration or migration of the builders of the *kurakkuppadai* or the South Indian megaliths as mentioned in a Pāṇḍya inscription, from Europe to India, or *vice versa*.

21-II. In Assam the Austric-speaking Khasis and the Tibeto Burman-speaking Garos and the Nagâs still build the megalithic structures [Godwin-Austen, H. H. 'On the Stone Monuments of the Khasi Hills Tribes,' *JRAI*, I, 1873; Clark, C. B., 'The Stone Monuments of the Khasi Hills', *JRAI*, III, 1874; Godwin-Austin, H. H., 'Naga Monuments,' *IA*, II, 1873; Hutton, J. H., 'The Meaning & Method of the Erection of Monoliths by the Naga Tribes', *JRAI*, LII, 1922; 'Some Megalithic Works in the Jaintia Hills', *JASBeng*, XXII, 1926; Mills, J. P., & Hutton, J. H., 'Ancient Monoliths of North Cachar', *JASBeng*, XXV, 1929; 'Assam Megaliths', *Ant*, III, 1929; Frazer, J. G., 'The Megalithic Culture of the Naga Tribes', *Research & Progress*, V, 1939; etc.]. The Megalithic structures occur in west Burma and Malaysia on the mainland, and in the islands of Sumatra, Nias, Laos, Mentainers, Sumba, Flores, Calebes [Peake, H., & Fleure, J. H., *Times & Places*, 1956, pp. 285-301], etc., and in Japan [Brion, M., *The World of Archaeology: India-China-America*, 1959, pp. 65]. In the Pacific Basin they have been found in the New Hebrides, Malecula, Carolines, Samoa, Tonga, Tabuai, Rorotonga, Tahiti, etc. [Peak & Fleure, *op. cit.* pp. 295-301]. "A legend", write Peak and Fleure," tells of the 'churning of the ocean' [Samudra-manthana] by a god armed with a great stone, and this suggests a possibility that the people who brought the Megalithic cult to the Indian peninsula and spread there the use of *iron* and of pottery may have to some extent come by sea" [*op. cit.* 248-9].

22-II. The presence of the cerebral or retroflex consonants (ṭ, ḍ, ṇ, ḷ, sh) characteristic of the Dravidian and some Dravidian words occurring in the Rigveda [Burrow, T., *The Sanskrit Language*, Lon. 1955, p. 386], shows that the Dravidians were present in the Rigvedic habitat in the Indo-Sarasvati basin prior to c. 1500 BC. J. Bloch builds up his case of the Dravidian movement from the north to the south on the basis of the distinctive cerebral ḷ occuring in such New Indo-Aryan languages as the Punjābi, Bangru (Hariyāṇā), Rājasthanī, Gujarātī and Marāthī [*Pre-Aryan & Pre-Dravidian*, Calcutta, 1929,

p. 37]. Out of the two groups of the Brāhmaṇas of India, those residing from Pushkar near Ajmer southwards including those of Gujarat and Mahārashtra belong to the Pancha-Draviḍa group [Wilson, J', *Indian Caste*, II, Bom., 1877, pp. 17-123]. The name Minā for a hill tribe still residing in the Matsya country (the hills in Jaipur and Alwar areas of northeastern Rajasthan) appears to be of Dravidian origin { 312-I }. The term *vrihi* occurring for the rice for the first time in the *Vedic* literature in the Yajur-veda, XVIII, 12 { 25-26-I } is of Dravidian (arichi) derivation, and is not traceable from the Austric chāma-la, from which the Hindi mame *chawal* has descended. We have already noticed that in the name of the river Sadā-nīrā flowing in Kosala (Oudh) to which the sacrificial fire was carried by Videgha Māṭhava and Gautama Rāhugana from the Sarasvati, the term *nīrā* sounds Dravidian { 133-I }.

23-II. Now let us turn to the protohistory of the Dravidian languages. "The above lexicostatic analysis provides, in spite of some draw backs," writes M. Andronov, "a much more detailed and clear picture of the disintegration of the Proto-Dravidian language than that available before. The separation of Brahui from Proto-Dravidian seems to have taken place still in the very beginning of the fourth millenium BC { when the aceramic Qile Gulmuhammad-I culture flourished in northern Baluchistan, and the microlithic Teri-people were in the Tamraparni valley in the extreme south, { 305-I }. The separation of Kurukh-Malto {spoken by the Oraons of Bihar and the Malers of Bengal } should be ascribed to the second and that of the Kui-Gondi { of the Khonds of Orissa and the Gonds of Chhattisgarh and Gondwānā in M. P.} to the first half of the third millenium BC { when the Indus Civilization was flourishing in the Indo-Gangetic basin and the Peninsular Chalcalithic Civilization was in occupation of the Narmada-Tapti valleys and the northern Mahārāshtra, existed in the Dravidian speaking Karṇātaka plateau }. Then, from the middle of the second millenium BC, the separation of Parji-Kolami { of Bastar and Vidarbh } went on {the Indus Civilization had ended and the Vedic Aryans had freshly occupied the Indo-Sarasvati basin where they were in close contact of the Dravidian speakers }. In spite of general opinion, the so-called South Dravidian language had existed .... for an extremely short period of time almost immediately broke up (10-11th centuries BC.) into Telugu (Tulu) and Kannada-Tamil. The latter, on the contrary, was remarkably long lived and disintegrated only in the beginning of the Christain Era (3-4th AD). The divergence of Tamil and Malayalam took place in 10-13th AD [' Lexicostatic Analysis of the Chronology of Disintegration of Proto-Dravidian,' *Indo-Iranian Journal*, VII, 2-3, 1964, p. 186].

24-II. Let us attempt to correlate the above data as they stand at present, and derive tenative generalizations. The borrowing of the exclusively Dravidian retroflex sounds by the Rigvedic Indo-Aryans before the language of their hymns was standardized by c. 12-13 cent. BC., suggests that the two linguistic groups must have lived together amicably in an area lying to the east of Iran, because, the Old Persian of the Avesta and the Achaemenian inscriptions of Kurush (Greek, *Cyrus*), 558-30 BC, and others, do not contain these sounds [Taraporewala, I. J. S., *Elements of the Science of Language*, Cal, 1951, p. 219, point No. 16]. This co-existence may be placed at c. 1500 BC, because, the Indus civilization had ended about 18th cent. BC { Fn. 13 }. It shows that the Rigvedic people and the Dravidians in northern India did not fight with each other, because, in that case, linguistic borrowings cannot normally take place. It is through a close relationship alone that such a linguistic phenomena become possible. In view of the archaeological hiatus that occurs generally between the Indus Civilization, on one hand, and the Painted Grey

Ware Culture assigned to the Vedic Indo-Aryans [51, 53-I] who were in close association of the Dravidians, on the other; the authors of the Indus civilization can seldom be identified reasonably with these protohistoric north Indian Dravidians. The worship of the phallus and the Mother-goddess is not a distinctive Dravidian feature, for it was prevalent much earlier in the Middle East [174-I], Southeast Asia and some other areas. The South Indian term *linga* for the phallus belongs etymologically to the Austric language family [Przyluski, J., *PA & PD*, pp. 8-15], showing that its worship was borrowed from the Austrics by the Dravidians. They later, in their turn, developed it to the heights of the S'aiva Siddhānta [Paranjyoti, V., *S'aiva Siddhanta*, Lon. 1954].

25-II. Turning to the Brahuis, whose language was the earliest to have branched off from the Proto-Dravidian earlier during the 4th mill. BC., we find ourselves confronted with certain difficult situations. "Here (at Lothal) Harappan Culture", observes A. L. Basham ", did not suddenly disappear, but merged with intrusive cultures.... can it be that the Harappa people slowly carried their culture and language down the coast.... then crossed the Coimbatore (Palghat) Gap and finally settled in the plain of the Kaveri ? This is a very tempting hypothesis, but it has difficulties, for it does not explain the pressure of the Gondi and Malto languages far to the east of India. If we are to bring them into picture we must postulate a much earlier penetration of Dravidian-speaking peoples into Central India—peoples who either had not acquired the high civilization of the Indus or had much degenerated from it" ['Some Reflections on Dravidians & Aryans', *BIT* c. II 1963]. Further, we find from the history of the Brahuis that they were a late comer in their present habitat in the hilly central Baluchistan. "We first find the Brahuis in authentic history," writes the authors of the Indian Gazetteer," divided into groups clustering round Kalāt under a chief called Mir Umar. Driving out the Jat population of the Jhalawān country, they made themselves masters of the whole region between Mastung and Lasbela" [*IG*, IX, p. 15-6]. Under the circumstances, we should look elsewhere for the locus of this linguistic differentiation.

26-II. Out of the Indian linguistic groups which have cultivated a written literature, viz., the Indo-Aryans and the Dravidians, it is only among the latter that we find some of the most primitive tribes. The primitives among the former have demonstrably lately acquired their present Indo-European languages like the Bhili, while their culture remains still mainly of a non-Indo-European type, whereas this does not seem to be the case in respect of the Dravidian primitives, a fact that suggests a higher antiquity for the latter. The most primitve Dravidian-speaking tribes, for instance, the Kadars and the Mala-Pantarams of Kerala and the Paliyans of Madurai Dist (Madras or Tamilnad) are still mainly hunters whose economy and equipment of tools is essentially like those of the Austric primitives. Further, their social institutions betray some Austric survivals, for instance, the filing of the teeth, etc. [Thurston, E., & Rangachari, K., *Castes & Tribes of Southern India*, Mad. 1909, Vol. III, pp. 75, 133, Vol. IV, pp. 33; etc.]. The same applies to the less primitives who are horticulturists-cum-hunters, viz., The Malavetans, the Thantapulayans, the Mathuvans (use the blow-gun), the Kamnikans (make dolmens), etc. [Hutton, J. H., *Caste in India*, Oxford, 1951, pp. 9-10].

27-II. It appears to the author that the Dravidian-speakers have been in the southern part of the Peninsular India from before the times the Indo-Pacific Austric hunting and later the horticulturist tribes with their dibble, the blow gun, the bow, the dog, the pig, the buffalo, and still later the ground-axe, etc., came from the east; and the Indo-Atlantic pre- or

non-Indo-European and the later the Indo-European peoples with their stone blade 'composite' and other tools and cattle-herding-cum-cultivation from the west made their advent into India. The Dravidians were thus culturally and economically crossed by the two great basic communities of the world to whom we can trace the origin and early development of all the civilizations of history, in their own home. The reasons were indeed more of geographical nature than anything else. As the Eastern Ghats that merge into the Western Ghats in the Nilgiris form a branch of the Mid-Indian Orographic complex {85-I}, it was natural on the part of the earlier Austric hunters with their blow-gun, the bow and the dog; and the latter horticulturist incipient food-producers with their dibble and the pig and still later the ground-axe {109-I} and the buffalo, to turn towards the south through the Eastern Ghats and reach the tip of the peninsula by the way of the contiguous Western Ghats and even Ceylon through the submerged prehistoric land-bridge or the Sethu in the course of the pursuance of their migratory economies. Similarly, the South India offered well-watered cultivable land and pastures in its plateaux and piedmonts to the incipient cultivators and cattle-herders of the Indo-Atlantic Community, the blade-industries-bearing pre- and Indo-Europeans, at a time when they had to seek newer and newer homes consequent upon the advancing Afrasian Desiccation. The cattle-herding immigrants into India found it more profitable to turn their faces south instead of the east, where not much favourable climatic conditions for pastoralism occurred in earlier times. As a result of this, more pastoral tribes have penetrated the Dravidian South India, than they did in the east in the Austric-speaking milieu.

28-II "....the North Indian and South Indian Kinship and marriage systems", observers C. Von Fuerer-Haimendorf, "are diametrically opposed, and reflect two entirely different principles. The northern system forbids the marriage of persons related by blood, the southern favours cross-cousin marriage; the northern system—through the rule of village-exogamy—leads to the spread of agnatic lineages over large areas, the southern system keeps kinsmen together and works for the self-sufficiency of the village. Had Dravidian populations lived in the north and mingled with the Aryan invaders, an overlapping of the two systems, resulting presumably in compromise, would have been inevitable, but as it is, we find a combination of the two principles only among the Marathi-speaking populations, whose kinship system, with its tolerance of cross-cousin marriage, represents a compromise between the Northern and the Southern patterns. And it is also in Maharashtra that the megalithic iron-age civilization must have clashed with the southward movement of the first Aryan people to invade the Deccan. In the eastern part of the Peninsula, direct contact between Aryans and Dravidians seems to have occurred much later. Here large block of tribal populations, many of whom spoke and still speak Munda {Austric family, 171-I} languages, formed a buffer between the two great population groups and the aborginal's assimilation to the one or the other remains even now incomplete. Such tribes as the Kolams, Gonds and Oraons were Dravidianised, while others, such as the Baigas, adopted Aryan languages. ....If the Dravidians of today were the remnants of ancient Dravidian populations which once occupied the whole of India and in the course of a process of attrition were gradually pushed southwards by victorious Aryans, one would expect their languages to comprise a large number of splinter groups.... But nothing of the kind is to be seen; all the Dravidian languages are closely akin, and appear rather as the branches of a group still in a state of organic growth" ['When, How and from where did the Dravidians come to India?', IAC, II, 3, 1954, pp. 244-6].

29-II. The old tools of interpreting such historical phenomena as the immigrations, migrations and stabilizations in terms of conquests and defeats may hardly help elucidate the mechanics of the protohistoric Dravidian movements within the subcontinent { 47-48-I }. The major economic factors under the influence of soil-exhaustion, climatic deviations, plagues or pestilences and such other physical and biological causes, rather than the human ones (tribal warfare, head-hunting, etc.), give normally rise to group-movements among such hunting and horticulturist peoples as the early Dravidians must have been. Such peoples have to keep intermittently moving onwards in the sequel of the exhaustion of the game and the fertility of soil and of water-resources. The Indo-Europeans were plough-cultivators-cum-herders in the peneplanes, fens and well-watered plateaux in contrast to the early Dravidians pursuing their economies on the hill-sides, in the forests and their margins, and the two peoples have had no plea at all to fight with each other for economic reasons as the protohistorians in India are tutored to believe.

30-II. In view of what we have reviewed above, the best course is to start from the proposition that the Dravidians have been in the South India since time immemorial before even the pre-Indo-European Austrics entered the subcontinent both by the sea and the land from the east { 49, 169-I }. They were hunters and fishers originally as were the ancestors of all the peoples of the globe.

It was from the 8th mill. BC onwards that with the rise of the incipient productive economy of horticulture among them the Austric-speakers began to spread far and wide from their home in the Southeast Asia, in the sequel of mainly the soil-exhaustion and in the course of these movements they entered India from the east both by the sea and the land more than once on their way to the Middle East, Africa and Europe { 174, 305-I }.

31-II. The nuclear South India, the habitat of the Dravidians, is that triangular part of the great plateau of the Peninsular India which lies south of the Satpuras and Chutia Nagpur highlands, being flanked on its east and the west by the Eastern and the Western Ghats, { 36-I }, respectively, that unite with each other in the Nilgiri Hills. The lowlands overlooked by it in these two directions were under the sea and have been forming by the vast deposits of alluvia (the late Tertiary Cuddalore and Warkalli beds overlain by the two Laterites which in their turn are succeeded stratigraphically by the East Coast and the West Coast Alluvium) by the rivers that run into the Bay of Bengal between the Gangā and the Tāmraparṇi, namely, the Subarnarekhā, the Baitarnī, the Mahānadī, the Rishikulyā, the Vamsadhārā, the Languliyā, the Godāvarī, the Kistna (Kṛishṇā), the Penner, the Palar, the Ponnaiyar, the Cauvery (Kāverī), the Vaigai, and the Tāmraparni, on one hand; and into the Arabian Sea, viz. the Periyār, the Ponnani, the Netravati, the Sharavati of the Gersoppa Falls, the sacred Gangāvati which on the West Coast forms the traditional border between the North and the South, Mandāvi of Goa, the Vāshishṭhī, the Sāvitrī, the Ulhās of Kalyan, the Vaitaraṇā, the Damaṇ-Gangā, the Purna, etc., on the other hand. The South India or the Dakshiṇa (Eng., Deccan), as the people in India call it, offers five types of environments to the human economy, viz., the hunting-gathering in the forests, the fishing on the rivers and the sea, the pastoralism in the dry interior, the horticulture (Kumri) on hill-sides and other situations and plough-cultivation or agriculture on the coastal lowlands and plateaux.

32-II. Since the Eastern Ghats branch off from the Mid-Indian range south of the Chutia Nagpur highlands, it was but natural that a number of horticulturist Austric-speaking tribes, which were entering the subcontinent from the east across Assam and were moving gradually in the sequel of soil-exhaustion turned south and reached the end of the peninsula and even Ceylon by the way of the Western Ghats beyond the Nilgiri Hills. In the course of this process a number of Dravidian hunting tribes may well have come in contact and in this manner the productive economy invented and spread by the Austrics was diffused to the Dravidian South. There is evidence available in the form of the teri-sites in the Tamraparni valley suggesting a similar process of initiation of the Dravidian tribes to the horticulture at the hand of a blade-tools and cattle-bearing Indo-Atlantic communinity in the course of the late 5th mill BC, if not earlier.

33-II. This double dose of the initiation to the incipient productive economy must have given rise to a peculiar social pattern in course of time among the Dravidians of the south. One of its peculiarities was that peoples who were the *gurus* adopted the language of the initiated ones. The Dravidian society was originally matrilineal. If a new comer marries the girl of such a community, his offsprings would speak the language of the mother and her family. Even if the married girl goes to the house of a patrilineal husband and his family, the children would normally speak in mother's language among themselves. In a patrilineal family the husband and wife's language becomes a mixture of the two in respect of mainly the vocabulary. The mother would naturally speak with the children at the breast in her own language and the father in his own. But the children, unless controlled, would talk mutually in the language of the mother and in this manner the linguistic change can take place in few generations even in a patrilineal community in favour of the language of the female in which though the customs of the male prevail. Both the Austrics and the Middle Easterners thus lost their languages. in favour of the Dravidian speeches, but the institutions of these peoples prevailed as a result of which the Dravidian civilization began to assimilate the alien traits.

34-II. The incipient productive economy involved an intermittently migratory life of a nature different from that of the hunting-gethering stage. The new economy now set on migrations the Dravidian horticulturists in the sequel of soil-exhaustion, and in some such a way the Brahuis seem to have differentiated from the main body of the speakers of the Proto-Dravidian of which the Tamil is the nearest representative, by C. 4000 BC. By the time these people reached the Indo-Sarasvati basin, the earlier pre-Vedic Indo-Aryans had already passed on to the Gangetic valley and the Vedic Aryans were then entering it and therefore the language of the Rigveda was subjected to phonetic and other changes in favour of a local Dravidian speech.

35-II. We have already noticed how the Afrasian Desiccation soon began to expel the followers of the new productive economy based on cultivation of cereals and dairying. As the desiccation was generally gradual, so were the movements of the various waves of the mixed farmers in search of new homes. India was the country that offered the best of the opportunities to them. Each wave of the Indo-Atlantic mixed-farmers brought in a new innovation from the Middle East into India. The climax was reached in the Urban Revolution.

36-II. The climatic conditions in India were, out of the Indo-Gangetic Plain, much more favourable in the south than in the east in Assam for the Indo-Atlantic community to carry the Urban Revolution to the Indo-Pacific community in order to repay, as it were,

the debt of having been initiating by the latter to the productive economy. This is the reason why we find the Peninsular Chalcolithic Civilization turned more southwards from the Indo-Sarasvati basin than towards the east. Agastya was, indeed, the hero of the introduction of the Urban Revolution in the South and thence to the Pacific Basin from the Dravidian East Coast of Orissa, Andhra, and Tamilnād. Tamilnad became the main theatre of this activity.

37–II. Tamilnad came into existence as a result of the silt-deposition by the rivers lying between Madras and Kanyā Kumāri. "Evidence of the advance of land", write H. B. Medlicott and W. T. Blanford, "is to be found on the Tinnevelli coast, where the deserted port of Korkai, now five miles inland, has been identified with the 'Kolkoi Eemporium' of of classical geographers. About 600 BC this town was the capital of a kingdom {of the Pandyas} and an important sea-port. By the time that Marco Polo visited this coast in 1292 AD, the advance of the land had necessitated the abandonment of the old port and the establishment of a new one at Cail, a town which has also decayed and was forgotten till its site was discovered and recognised by Bishop Caldwell" [Geology of India, II, Cal, 1871, p. 307].

38–II. The continuous historical tradition embodied in the Tamil literature about the flourishing of three Sanghams (Academies) under the patronage of the Pandya kings is noteworthy. Agattiyanār (Agastya), the sage associated with the migration of northern culture into South India, headed the First Sangham, the Talaichangam; he is deemed to be the author of the earliest grammar of the Tamil language. The same sage and his disciple Tolkāpiyar (author of the Tolkāppiyam, the earliest extant Tamil grammar) headed the Second Sangham. Both these Sanghams are said to have lasted many centuries. The last Sangham is brought down to historical times, and held to have been patronised by numerous Pandya monarchs. No works attributed to the writers of the first two Sanghams have come down to us except the Tolkāppiyam. It is likely that the Sangham existed as an organized academy for several centuries from about the 5th or 6th century BC. A section of the Tolkāppiyam gives us glimpses of the political, social and religious life of the people. The Purānarūru otherwise known as Purappaāṭṭu or Puram, forming a work of the Eṭṭutogai collection of the Third Sangham (Madurai) contains 400 rheroic poems describing the achievements of many princes and warriors. Padiṟṟuprattu of the same collection contains poems in praise of eight Chera kings. The Second collection of the Sangham work comprising the Pattupāṭṭu works is valuable historiographically. Out of this the *Tirumuruhāṟṟuppadai* furnishes an account of various hill-shrines of the diety Muruga (later identified with Subrahmanya or Kartikaya): the *pattinappālai* gives a picture of the great Chola port of Kāveripattinam (the Khaberis of the Graeco-Raman accounts) and of trade relations of the Tamils with foreign countries. The *Perumbaṇāṟṟuppadai* contains historical account of the kingdom of Kānchi (Conjeevaram) being further valuable for a reconstruction of the political geography of the southern India: the *Sirupāṇaṟṟuppaḍai* portrays historical details about a number of contemporary rulers of the Chera, the Chola and the Pandya kingdoms: the Pandya rulers are further celebrated in the *Maduraikanchi* and the Neḍunalvāḍai and the famous Karikala Chola of the 2nd cent. AD in the Porunaraṟṟuppaḍai: and lastly the Malaipaḍukadām or the Kuttaraṟṟuppaḍai gives us a glimpse of different regions of the land and its civilization. (Pillai, V. K., *The Tamils 1800 Years Ago*, 1904: Aiyangar, P. T. S., History of the Tamils, 1910: Srinivasachari, Rao Bahadur C. S., 'Tamil Literature', *Encyclopedia of Literature*, NY, 1946, pp. 357–64: Dikshitar, V. R. R., Studies in Tamil Literature and History).

39-II. There were five different communities scattered in different parts of the country and living apart by clans, each having its own tutelary deities and chiefs following their own customs and manner of living, such as *Marutamakkal* or agricultural tribes, *Nuruchimakkal* or semi-agricultural tribes, *Mullaimakkal* or pastoral tribes, *Neithalmakkal* or fishing tribes, and *Palaimakkal* or hunting tribes. Among the agricultural tribes the towns were called Ur, Perur (big village), and Mudur (old village). The chief of an agricultural tribe in ancient times was called Uran (lord of the village) or Kilavan (elder, owner). The semi-agricultural tribes living in hilly districts were known as Kuravar. Their chief was known as Verpan or Chilampan. Their towns were modest clusters of huts called sirukudi (little huts). The pastoral tribes inhabited jungle tracts of land. They lived in villages called cheri and padi. The men were called Ayar and Idaiyar. Their tribal drum was called pambai. The fishing tribes lived in villages called pattanam or pakkam. Their chiefs were known as Cherpan or Pulamban, Turaivan, and Konkan, and the ordinary men were called Parather and Nulaiyar. The tribes inhabiting desert tracts were known as Vedar. These were the nomads. They lived on hunting and plundering the adjoining countries. The habitations were called Kurumbu, and their war drum was Tudi. The people were also called Maravar and Eyinar. The pastoral tribes worshipped Vishnu; the hill tribes worshipped the god Muruga; the fishing tribes worshipped the god Varuna; the agricultural tribes worshipped the god Indra, while the nomads worshipped the goddess Kali. There were five territorial divisions, such as hills *(Kurunchi)*, plain *(Marutham)*, the region between hills and plain *(Mullai)*, seashore *(Neithal)*, and waterless waste *(Palai)*. Besides, the *Tolkappiyam* refers to four professional castes such as *Arasar* (Kshatriyas or Rulers), *Anthanar* or Parpar (Brahmans), Vanikar (Merchants), and Vellalar (Agriculturists). The duties of the four classes are thus described: learning, teaching, sacrificing, officiating at sacrifices, giving alms, and receiving alms, these belong to the Brahmans. Learning, sacrificing, giving alms, protecting the people, crushing the wicked, these are the functions of the king. Learning, sacrificing, giving alms, cultivation, trade, and tending cattle, these belong to the class of merchants. The Vellalas are divided into two classes, the higher and the lower. The duties of the higher type of Vellalas are learning, sacrificing, giving alms, cultivating lands, trade and tending cattle, while those of the lower type of Vellalas are learning (excepting the Vedas), giving alms, cultivating lands, tending cattle, trade, and services to others. Only certain duties were special to each class. Thus the special duties of a Brahman were to officiate at sacrifices and receive gifts; those of the king to protect the people and punish the wicked; those of the merchants and the higher Vellalas cultivation, trade, and the breeding of cattle; and those of the lower Vellalas services to others, trade, agriculture, and the breeding of cattle. The higher Vellalas and the merchant class had at first the same duties to perform, even though in actual practice each class specialised in one or another walk of life. The merchant class attended to commercial matters. The attention of the higher Vellalas was absorbed by high matters of state. They could enter into vocations allotted to the upper three classes. Nachchinarkiniar states that Vellalas could give their girls in marriage to those of the kingly class, serve in the army as commanders, and could become kings of the second class, and be called '*Arasu*' and '*Vel*' (*Kurunilamannar*). The Vellalas occupied a high position during the days of Tolkappiyar. In the words of Tiruvalluvar, the author of the *Kural*, they constituted the noble heritage of a nation.

As the *Tolkāppiyam* informs us the country was fertile and there was plenty of grain, meat and fish: the Chera country was noted for its buffaloes, jackfruit, pepper and turmeric. In the Chola country, watered by the Kaveri, it was stated that the space in which an elephant could lie down produced enough to feed seven, and a *vēli* of land yielded a thousand *kalams* of paddy.

40-II. Now let us turn to another linguistic group possessing an ancient written literature including the historical tradition. This is that greatest literary contribution of the ancient man which is written in the Sanskrit-Prakrit languages of the Old and Middle Indo-Aryan {271-I.} belonging to the Indian Indo-Europeans (the Aryans) or the Indo-Aryans as the philologists prefer to call them. The old Sanskrit works are divisible on linguistic basis into a Vedic and a Purāṇic-Epic-Āgamic division which we would call the Puranic for the sake of brevity.

41-II. The Vedic literature comprises traditionally the (1) three original *samhitas* {collections of sacrificial hymns and prayers in verse addressed to the nature-gods of the Agricultural Horizon in the development of the religion, 63-I, 3} called the '*trayī-vidyā*' or the 'Vedic triad' consisting of the *Rigveda*, 1017 hymns, the *Sama-veda*, 1549, the *Yajur-veda*, 2086, together with the subsequently admitted Atharva-veda, 6680 (*atharvan*=the fire-priest, *athravan* in Iran), which, in contrast to the Vedic triad, deals with a pre- and non-Vedic form of the religion belonging to the Animistic Horizon of the religious development {63-I 2} and (2) associated works called the *Brāhmaṇas* {aim to explain the symbolical meaning and mutual relation between the prayer-hymns and the rituals, 104-I, 3, c. 1000-800 BC} including the *Araṇyakās* and the 18 *Upanishads*. We have already seen how and why the scholars have generally dated the Rigveda in its present form to c. 1500 BC {Fn. 20}. F. Maxmuller dated, on the basis that in the *Brahmanas* we find only the most rudimentary elements of the post-Buddhist Hinduism, i. e., the belief in transmigration, the *karma*, the *moksha*, etc., and other factors, the *Brahmanas* to c. 600-800 BC and the initial Rigvedic or the 'Chhandas' period to c. 1000-1200 BC [*Rigveda Samhita*, IV, p. VII]. To this should be added, as the present writer thinks, a couple of centuries during which the Rigvedic speech assimilated the Dravidian retroflex sounds. This brings us to c. 1500 BC {120-I} for the advent of the earliest wave of the Vedic people into the Indo-Saraswati basin {117-I}. We have also noticed earlier how the antiquity of the general use of iron goes back in India to c. 12-11th cent. BC. {51-I}. Iron became the main industrial material by 1100 BC in Iraq and c. 800 BC in Egypt. The metallurgy of iron dates the earliest in India, where it appears to have been introduced by the Southeast Asian Austrics and it seems to have carried to Africa from India, rather from other regions. We know that iron was unknown to the Rigveda.

42-II. We have noticed earlier the importance which the bard or the chronicler achieved in practically all the aristocracies of the ancient world {3-II}. "Among primitive peoples", write the authors of the *Notes & Queries on Anthropology*, Lon. 1951, on pp. 195-204, "the traditional knowledge which is an essential part of every culture is of necessity handed down orally from generation to generation. Sometimes these accounts are mythological, sometimes part historical and in cases historical, too. Among peoples with a central organization there is often an official recorder, whose duty it is to recite traditional history on state occasions, such records sometimes going back for several hundred years. Some members of the lineage

may be forgotten, but if a number of genealogies are taken and events are traced back to an ancestral hero or person noted in the traditional history, some idea of the lapse of time since its happening may be formed. It is usual to allow 25 years as an average for a generation, but with the classificatory system this may prove misleading and careful checking is necessary. Reported events may be purely mythological or they may refer to migrations, conquests, or to the invention or introduction of arts or customs. Sometimes such events may occur in the histories of neighbouring tribes and migrations and conquests can actually be traced. Sometimes reference may be made to the arrival of some historically known foreigner, or to an eclipse, or some other datable natural phenomenon" (*Notes & Queries on Anthropology*, Royal Anthropological Institute, Lon, 1951, pp. 195, 204).

43–II. This marks the beginning of the sense of history among the ancients. The class of the bards or the chroniclers arose earlier in ancient Egypt, Iraq and Israel. Homer, the author of the *Iliad* and *Odessy* was a bard, and so were, indeed, the authors of the Scandinavian *Eddas* and the *Sagas*. The official chroniclers were known in China in 18th cent. BC. According to their traditional accounts, the first dynasty to have ruled in China was that of Hsia, founded c. 1994 BC by Yu the Great. The Greek chronicle of Berossus (3 cent. BC) for the kings of Babylonia is still a useful document. Among the Sumerian dynastic-lists the Weld-Blundell Prism, giving an almost complete list of kings, was written during the Third Dynasty of Ur (2113–2096 BC) in the earlier reign of Utuhegel of Uruk (Erech), 2120–2114 BC [Langdon, S. *Oxford Editions* of Cuneiform Texts II, 1923]. Its earlier portion reads thus :– "After the kingship descended from heaven the kingship was (founded) at Erida (Eridu) city. At Irida Alulim reigned 28,800 years; Alalgar reigned 36,000 years; 2 kings ruled 64,8000 years. Irida was overthrown, its kingship to Bad–urudu–nagar city passed.... 3 kings–their years 108,000. Bad–urudu–nagar was overthrown; its kingdom passed to Larak....Larak was overthrown; its kingdom to Ud–kib–nun–na { Sippar } city passed.... (it) was overthrown; its kingdom passed to S'urippak { Fara }. At S'urippak Ubar–du–du reigned 17,600 years;....8 kings make 24,200 years. Then came the Flood. After the Flood had come, the kingdom came down from heaven. The kingdom was at Kish. At Kish Gaur reigned 1200 years...." [Barton, G. A., *The Royal Inscriptions of Sumer & Akkad*, New Haven, 1929, pp. 347–8].

44–II. As for early dynastic history of Egypt, the King-list of Manetho (c. 270 BC) is still the most comprehensive record on the subject. The next comes the Turin Papyrus compiled during the period of the XIXth Dynasty of the New Kingdom (1567–1085 BC). Fragmentary and shorter lists have been provided by the Tablets of Abydos, (1300 BC), Karnac (1500 BC) and Saqqara (1300 BC) and the Palermo Stone that was engraved in the time of the fifth Dynasty of the Old Kingdom (2780–2280.)

45–II. The Sumero-Babylonian and the Egyptian dynastic accounts are written in ideographic scripts just as the Chanesedo, is in which each object or idea has a distinct sign. The Assyrians simplified the whole cuneiform system of Sumero–Babylonian writing; nevertheless they still needed about 570 signs [Langdon, S., *A Sumerian Grammar and Chrestomathy*, Par, 1911; Barton, G. A., *The Origini & Development of Babylonian Writing*, Baltimore, 1913 ; L. W. King, *Assyrian Language*, Zon 1901, ect.]. The Egyptian hieroglyphic writing, too, had hundreds of signs [A. H. Gardiner: *Egyptian Grammar*, Ox, 1550, etc.]. The greatest handicap in reading the names of these dynastic lists is that both these ideographic systems used the vowels very sparingly with the result that it is very difficult

and even impossible for us to find out the correct original forms the names of the rulers and others. In the same way many vowels had no distinctive signs of their own. For instance, the Akkadian or Babylonian as well Assyrian made no difierence between *b* and *p* final, *t* and *d*; between *f*, *c*, and *k* final, or *z*, *s*, and *ts* final. The confusion is still more pronouncing in the Egyptian. "A consequence of the complex and often defective nature of hieroglyphic writing is," writes A. H. Gardiner, "that scholars are still in doubt as to the correct transliteration of words" [*op. cit*, p. 62].

The highly exaggerated reigns given in the Weld-Blundell Prism attain normal proportions immediately after the mention of Gilgamesh :- " Kish was overthrown; its kingdom passed to Eanna, where Meskiaggashir, who 'crossed the sea and ascended to the mountain', reigned 320 years, ... Enmekar, his son, who built Uruk (Erech), ruled 1200 years; the divine Tammuz, the fisherman, whose city was Khabur, ruled 100 years; the divine Gilgamesh whose father was a fool, ruled 126 years; Ur-Nungal, his son, ruled 30 years; Utulkalamma, 15 years; Labashir 9 years; Ennunnadanna 8 years; Sukhushkhede 36 years; etc. [Barton, G. A. *op. cit*, p. 349]. The list continues down to Hammurabi and Samsu-iluna.

46-II. "Neither the Egyptians nor the Babylonians", writes H. R. Hall, "ever devised a continous chronological scheme based on a fixed era. The Sothic cycle of 1460 years was never used by the Egyptians as an era. The early Egyptians and the Babylonians spoke of individual years as 'the year in which such-and-such an event took place'; later on the Egyptians reckoned by the regnal years of each individual king. Such a reckoning is singularly useless for the purpose of continous history. In Egypt the only list of regnal years we possess, the fragmentary Turin Papyrus, often disagress with the evidence of contemporary monuments, while Manetho's" figures have been so garbled by later copyists that they are of little value" [*The Ancient History of the Near East*, Lon, 1952, p. 15].

47-II. The well-Known Canon of Kings, used by the Egyptian geographer Claudius Ptolemy (2 nd cent. AD) and is therefore called Plotemy's Canon provides a list of successive Babylonian, Assyrian and Persian rulers, complete with the length of their reigns in years and a record of eclipses, from 747 BC down to the conquest of Babylon by Alexander the Great in 331 BC. For the dates prior to this period we have to depend on lists of the *limmus* (Assyrian dignitaries and officers after whom the individul years were named in Assyria). The archaeologists could find out such *limmu*-lists for a continous period of 227 years. The issue was how to correlate the limmu-lists with Plolemy's Canon. Later a *limmu* list of a certain Pur-sagail of Gozan was found in which a total eclipse of the sun that had taken place in the Assyrian month of Sivan (May-June) was mentioned. The astronomers then found it out that it happened on 15 th June, 763 BC. This eclipse could easily be identified among the eclipses listed in Ptolemy's Canon and thereby the chronology of the Assyrian history could be carried reliably as far back as the year 893 BC and also the regnal years, 556-539 BC of the last Babylonian king Nabû-nāid (Nabonidus, as the Greeks have recorded his name) who was defeated by the Persian king Cyrus II who had ascended the throne in 559 BC, three years before his victory, could be worked out. The chronology of the history of Babylonia and Assyria or of the entire Western Asia thus stands on a solid basis only down to the year 893 BC. But when we go back into the earlier periods the dating becomes uncertain at first by decades and for still remote times by centuries, especially in the 3rd and 4th mill. BC. Nabû-nāid (556-539 BC) an early contemporary of the Buddha and Mahavira and the S'aisunāga king Ajātaśatru, e. 554-427 BC., has mentioned

three previous events in his inscriptions, that (1) the Babylonian king Shagarakit-Suriash (Suriash=Indo-Aryan Sūrya: Shagarakit-Suriash was an Aryan Kassite king of Babylonia) lived 800 years before him; and (2) Narām-Sin of the Akkadian dynasty, who was the son of Sharrum-Kin (Sargon of Agade as the Western scholars call him), lived 3200 years before him. This gave the year about 1350 BC for Shagarakti-Shuriash and 3750 BC for Narām-Sin. In a third statement Nabū-nāid had said that Hammurabi, the great Babylonian king, flourished 700 years before Burna-buriash II (a Kassite king of Babylonia). This gave the date c. 2150 BC for Hammurabi, [for these inscriptions of Nabonidus, *A Guide to the Babylonian & Assyrian Antiquities*, in the British Museum, Lon, 1908, pp. 194-6].

48-II. A number of cuneiform chronicles bearing on the chronology of Assyria and Babylonia for the periods after Nabonidus were found, for instance: (1) The British Museum, Babylonian & Assyrian Room, No. 121, containing an account of certain events which took place during the period of the Kassite Dynasty {107-I}; (2) No. 124, a list of events during the reigns of Khammurabi or Hammurabi, Samsu-iluna, Ammi-ditana, Ammi-zaduga, etc.; (3) No. 126, names of the kings of the first two Babylonian dynasties; etc., apart from the so-named Babylonian Chronicle, the Synchronous History, etc., all belonging to the 2nd mill. BC. Till 1937, Hammurabi, the famous law-giver of Babylonia was considered on the basis of the statement of Nabu-nāid to have reigned between c. 2123 and 2081 BC, as determined by L. W. King. In this year it became known from the Mari tablets that Hammurabi was a younger contemporary of Shamshi-adad I of Assyria, whose date was regarded to be as nearer 1800 than 2000 BC. Hammurabi's date was reduced accordingly and the support to the change came from Woolley's excavations at Alalakh in the light of the evidence that Hammurabi had also been a younger contemporry of Yarim-lin of Yamkhand in Syria who died about the middle of the 18th cent. BC. Then the carbon-dating came to some help. Charcoal was obtained from the roof-beam of a house in the excavated ruins of Nippur which had been ascribed by means of dated tablets with a high degree of probability to a period not earlier than the year 1 of king Shu-sin or later than the year 3 of his son and successor, Ibi-sin, a range of 12 yrs. It gave the carbon-date 3945 ± 106 yrs. It is known that these two kings reigned some 2½ centuries before Hammurabi. The present date of Hammurabi {107-I} is 1792-1750 BC. [Jacobson, T., *The Sumerian King List*, Chic, 1939; Smith, S., *Alalakh & Chronology*, Lon. 1940; *The Chronology of the Kassite Dynasty*, 1951; Gelb, I. J., '*Two Assyrian King Lists*', *JNES*, XIII, 1954; Parrot, A., *Chronologie mésopotamienne*, Par. 1957; Meer, P. van Der, *The Chronology of Ancient Western Asia & Egypt*, Leiden, 1955; Rowton, M. P., 'The Date of Hammurabi', *JNES*, XVII, 1958]. Much confusion and complication prevail still about the chronology of ancient Egypt and Israel.

49-II. In a contrast to the ancient traditional history of the Middle East recorded in the fragmentary dynastic lists and other documents written in the ideographic cuneiform and heirolyphic scripts, imperfect for phonetically a correct rendering of proper nouns, the pre-Buddhist dynastic traditional history of India, as embodied in the Puranic literature consisting of the Puranas, the Epics and the Tantric works, possesses certain virtues. All the chronicles of Babylonia are not earlier than 2000 BC in their extant form. The nucleus of the Rigveda, II-IX, {316-I} belongs to c. 1500 BC, and the Atharva-veda also is assigned the same antiquity or somewhat earlier still for its contents, though not for its language ["the spirit which breathes in it is that of a prehistoric age", Macdonell, A. A., *A History of*

Sanskrit Literature, Del. 1961, p. 186, etc.]. The mention of the Purāṇa in the *Atharva-veda*, XI. 7. 24, suggests that the Puranas were already known during the middle of the 2nd mill BC and therefore may well go back to c. 2000 BC, standing thus on par with the extant Sumero-Babylonian chronicles in respect of antiquity. Further, the proper nouns they contain represent phonetically the nearest forms of the original ones.

"The word 'purana' means," writes Winternitz, "originally, 'old narrative'......in the Atharva-Veda, XI. 7. 24, besides the four Vedas, 'the Purana' is also enumerated......In the *Gautama-Dharmasutra*, XI. 19, which is regarded as the oldest of the preserved law-books, it is taught that the king is to take his authorities on the administration of justice, the Veda, the law-books, the Vedāngas, and the 'Puranas'. As there are good grounds for assigning the above-mentioned Dharmasutras to the 5th or 4th century BC, there must have been even at that early period works resembling the Puranas. It is indeed likely enough that the Puranas are only recasts of older works of the same species in which were collected ancient traditions of the creation; the deeds of the gods, heroes, saints and ancient ancestors of the human race; the beginnings of the royal families, and so on. Also the relationship of the Mahabharta to the Puranas indicates that the latter reach back a great antiquity and that the Puranas certainly existed already long before the final redaction of the Mahabharata. The Mahabharata not only calls itself a Purana, but also begins exactly as the Purana texts usually begin. Ugrasravas, the son of the Suta Loma-harshaṇa, appearing as narrator" (Winternitz, M., *A History of Indian Literature*, I, Calcutta, 1927, pp. 519-20). The authors, reciters and preservers of the Puranas were the bards, usually called the *sutas*.

50-II. The *sutas* were the hereditary professional compilers, preservers and reciters of the dynastic accounts and their caste was deliberately founded for the purpose by the pre-Vedic primeval king Prithi-Vainya [314-I], who had flourished some five steps before the Flood of the Indian dynastic accounts. "The mighty Prithu", narrates the *Vishṇu-purāṇa*, I, 13, "the son of Veṇa, being thus invested with universal dominion by those who were skilled in the rite, soon removed the grievances of the people whom his father had oppressed, and from winning their affections he derived the title of rājā or king.... At the sacrifice of the birth of the Prithu, which was performed by Brahmā, the intelligent *Suta* was produced....at that great sacrifice also was produced the accomplished Māgadha (later became 'traders', *Manu-smriti*, X, 48) : and the holy sages said to these two persons, 'Praise ye the king Prithu, the illustrious son of Veṇa (*Manu-S.* X, 19, 'moreover, the son of a Kshatriya by an Ugra female is a Svapāka; but one begotten by a Vaidehaka on an Ambashṭha female is named Vena : 49,....to Venas, playing drums) ; for this is your especial function, and here is a fit subject for your praise." But they respectfully replied to the Brahmans : 'We know not the acts of new-born king of the earth; his merits are not understood by us; his fame is not spread abroad; inform us upon what subject we may dilate in his praise." Prithu divided the professional chroniclers and reciters into two sub-classes, namely, the Sutas to whom he alloted *Anupa* country or the Middle Narmada Plain or Nimar and to the Māgadhas assigned Magadha or South Bihar (*Brahm. P.* IV, 60-67; *Brahmāṇḍa-p.* II, 36, 160-72). The Māgadhas had no access to the Vedic lore. According to the *Padma-p.* I, 29, there were two more sub-classes, the Bandins and the Charaṇs residing in Kalinga or Orissa. The compositions of these sub-classes of the chroniclers were known as the *itihāsa*, the *purāṇa* ("that which lives from ancient times," *Vayu-p.* I, 203 : "containing records of the past events," *Matsya-p.* 53, 63), the *gathās* (epic song verses), the *narāśaṃsis* (songs in praise of heroes), etc.

This may serve as an answer to those who say that the ancient Indians had no sense of history.

51-II. The Puranas are prescribed to possess the *panchlakshanās*, or to be the 'five-faceted' [*Amarasimha*], i. e., to contain five topics, viz., sarga (creation), pratisarga (dissolution and recreation), vaṃśa (divine genealogies), manvantaras (ages of Manus) and vaṃśānucharita (genealogies of kings). The Puranas are said to be 18 'maha' (major) and 18 'upa' (minor) puranas in number. The list of the Mahā-Purāṇās is given almost in all the Puranas, mostly in the same order : the Brahma, the Padma, the Vishṇu, the Vāyu, the Bhāgvata, the Nāradiya, the Mārkaṇḍeya, the Agni, the Bhavishya, the Brahmavaivarta, the Varāha, the Linga, the Skanda, the Vāmana, the Kūrma, the Matsya, the Garuḍa and the Brahmāṇḍa. Ten incarnations of Vishṇu (daśāvatāra) appear in most of the Puranas, of whom five (*Matsya; Kurma; Varaha; Narsimha* or lion-man; and *Vamana* or dwarf) are mythological; four (Paraśurama, Rāma, Krishṇa, and Buddha) are historical; and one (Kalki) is still to come. Three of these, Varāha, Nṛasiṃha, and Vāmana, whose germs are found in Vedic literature, are said to be '*divya*' or divine; the rest are *mānushya* or humans [Pusalkar, A. D. 'The Puranas,' *Encyclopedia of Literature*, NY, 1966, pp. 448-50 : Smith, V., *Early History of India*, Ox, 1904, pp. 11-2 ;Pargiter, F. E., *Purana Text of the Dynasties of the Kali Age*, OX, 1913 : Rapson, E. J., 'The Puranas', ch. XIII, *The Cambridge History of India*, I, 1921, pp. 264-83 : Pargiter, F. E., *Ancient Indian Historical Tradition*, OX, 1922. Raychaudhuri, H. C., *Political History of Ancient India*, Cal, 1923, pp. 2-8: Pradhan, S. N., *Chronology of Ancient India*, Cal, 1927 : Pusalkar, A. D., *Studies in Epics & Puranas*, Bom, 1955 : Bhargava, P. L. *India in the Vedic Age*, Lucknow, 1956 : Mankad D. R., *Puranic Chronology*, Vallabh Vidyanagr, 1956 ; a journal '*Purāna*' is published since 1959 by the All-India Kāshirāj Trust, fort Rāmnagar, Vārāṇasi : Mankad D. R., 'Studies in the Puranic History, Geneology & Chronology in modern Times,' *Purāna*, IV pp. 3-22 ; Pillai, G. K., *Traditional History of India*, Allahabad, 1960].

52-II. The Puranic vaṃśānucharita or dynastic account of kings is divided by the event of the Bhārata war, with which the ancient period of the traditional Indian history ends, into two sections, the earlier beginning with the ten sons of the mythological progenitor Manu the Son of Vivasvān or Sun (Vaivasvat Manu) who was also the hero of the Indian Flood legend (it appears to have been borrowed from Babylonia and recast into an Indian garb of which we get two forms, a South Indian in the Matsya or the Purana of the Fish incarnation and a North Indian in other Puranas, the Mahābharata, Vana, CLXL and in the *S'atapatha-brāhmaṇa*, I, 8, I, among the Vedic works) and ending with Parikshita soon after the Maha Bhārata war when the Iron age was dawning in northern India; and a later one which is in the form of a prophesy carried down to the Guptas containing the durations of the reigns of the kings which are quite normal [*Vishṇu*- p., XXIV]. It is stated that a period of 1115 years had elapsed between the birth of Parikshita and the end of the Nandas, when Chandragupta Maurya, a contemporary of Alexander the Great acquired the throne in c. 323 BC. This shows that the Bharata War took place late in the 15th cent. BC. The Yādavas of Western India having their capital at the port of Dvaravati were exterminated in the tragic Yādavasthati by an iron weapon, which had sprang from the belly of Sāmba [*Mhb*-Mausala, III]. Iron was looked upon as an unclean metal by the Indo-Aryans, as we gather from the story of the demon Lohāsura who attacked the Paṇḍavas [Skanda p., I, II, 65.] and the legend of Loha-gandha connected with the king Janmejaya, the son of Parīkshita. These legends suggest that coinci-

dentally with the war of the Mahābhārata the Iron age set its foot in India, and the war on this basis {51,104,113-I} may well be taken to have occurred most probably during the 13th cent. BC. As the war-weapons of iron were first developed by the Assyrians {71-I} in order to defeat the Bronze age chariotry of the Aryans {113-I}, this very development may later have reached the northern India from Assyria, though Austric tribes in the east and the south may well have been practising the primitive metallurgy of iron from still earlier times, and the Aryans looked upon the black metal as unclean and inauspicious.

53-II. On a comparison between the Puranic and Babylonian lists, what may strike one the most is the common occurrence of the Flood, which had taken place in Iraq as the archaeological and other evidence show [Peake, H., *The Flood*, Lon. 1930: Alexander, H., *The Gilgamesh Epic & Old Testament Parallels*, Lon. 1945: Parrot, A., *Déluge et Arche de Noé*, Par. 1953: Mallowan M.E.L., 'Noah's Flood Reconsidered', *Iraq*, XXVI, 2, 1964]. It may not be surprising if some one attempts to read a meaning in the name Ikshvāku and its Prakrit form Okkāka, the proginiter of the ruling dynasty of the first Indian city-state of Ayodhya in the middle gangetic valley, on one hand; and the Akkadian reading *ishshaku* of the *Sumerian enshi*, the prince or administrator in Sumer and Akkad, on the other; or may try to find out if the use of — u termination in the names of important Puranic and Vedic Peoples and persons, for instance, Manu, Anu, Druhyu, Yadu, Prithu, etc., have anything to do with the same termination of Akkadian language employed in personal names {118-I}. The Babylonian pattern of the early portion of the dynastic list of the Puranas further suggests the probability of a generic relationship between the kingship in Iraq and India. If so, the Urban Revolution of the Middle Eastern pattern of which the kingship was an integral part was first introduced in the Gangetic valley some time during the Akkadian period, c. 2371-2230 BC {in 84-I to be corrected to these dates}, say, in the 23rd cent. BC. The difficulty arises when we find the majority of the Indian dynasts to be Indo-Aryan etymologically, a fact that suggest *prima facie* that whosoever may have been the first Akkadian Ishshaku in India, the dynasty he first established here was Indo-Aryan both linguistically and culturally. The inference presupposes some sort of close contact between the Akkadians and the Indo-Aryans even before the appearance of the Kassites in Babylonia {107-I}. Now let us return to Marshall {17-II}.

54-II. "A comparison of the Indus and the Vedic cultures", writes Sir John, "shows incontestably that they were unrelated :-

The Vedic Culture	**The Indus Civilization**
A. The picture of Indo-Aryan society portrayed in the Vedas is that of a partly pastoral, partly agricultural people, who have not yet emerged from the village state, who have no knowledge of life in cities, and whose houses are nondescript affairs constructed largely of bamboo.	**AA.** At Mohenjo-dero and Harappa we have densely populated cities, with houses of brick equipped with adequate sanitation, bathrooms, wells, etc.

B. The metals which the Indo-Aryans used in the time of the Rigveda are gold and copper or bronze; but a little later, in the time of the Yajurveda and Atharvaveda, these metals were supplemented by silver and iron.

BB. Among the Indus people silver is commoner than gold, utensils and vessels are sometimes made of stone–a relic of the Neolithic Age–as well as of copper and bronze. Of iron there is no vestige.

C. For offensive weapons the Vedic Aryans have the bow and arrow, spear, dagger, and axe, and for defensive armour the helmet and coat of mail.

CC. The Indus people also have the bow and arrow, spear, dagger, and axe, but like the Mesopotamians and Egyptians, they have the mace as well; while defensive armour is quite unknown.

D. The Vedic-Aryans are a nation of meat-eaters, there is no direct mention of fishing in the Vedas.

DD. With the Indus people fish is a common article of diet, and so, too, are other aquatic creatures.

E. In the lives of the Vedic Aryans the horse plays an important part.

EE. To the people of Mohenjo-dero and Harappa, the horse seems to have been unknown; it has no place among the many animals figured at these places, though some bones of a horse were found on the surface at the former site.[62]

F. By the Vedic Aryans the cow is prized above all other animals and regarded with special veneration.

FF. Among the Indus people the cow is of no particular account, its place being taken by the bull.

G. Of the tiger there is no mention in the Vedas, and of elephant but little.

GG. Both these animals are familiar to the Indus people.

H. The Vedic religion is normally aniconic.

HH. At Mohenjo-dero and Harappa iconism is everywhere apparent.

I. In the Vedic pantheon the female element is almost wholly subordinate to the male, and neither the Mother Goddess nor S'iva (with whom, however, the Vedic Rudra was afterwards to be identified) has any place among its members.

II. Among the Indus cults those of the Mother Goddess and Siva are prominent, and the female elements appear to be co-equal with, if not to predominate over, the male.

62 – The domestic horse was used by the pre-Indus Zhob culture {Fn. 15} people of northern Baluchistan, a part of the Indus valley as the Zhob falls into the Indus through the Gomal. The evidence that the horse was known to the Indus people is now gathering [Pusalkar, AD, 'Horse in Protohistoric India,' *Munshi Indological Felicitation Vol.*, 1963, Joseph, P. 'The Horse & the Indus Culture,' *JBU*, Sethna, K. D., 'The Aryans, the Domestical Horse & the Spoked Chariot-Wheel,' *JASBom*, N. S., XXXVIII, 1963; etc]. The humid climatic conditions do not suit the horse. The conditions were not therefore very favourable for the dominance of horse in comparison to those obtaining in Baluchistan.

J.	Fire (Agni) ranks among the foremost deities of the Veda, and the domestic hearth (*agni-kuṇḍa*) is a characteristic feature of every house.	JJ.	In the houses of Mohenjo-dero the firepit is conspicuously lacking (Fn. In HR Area, Section B, Black 2, House IX, Room 85, there is a depression in the latest floor which might conceivably have been an *agni-kuṇḍa*, but at least it is a very doubtful example.)
K.	To the Indo-Aryan phallic worship was abhorrent.	KK.	Among the Indus people there is abundant evidence of its existence". (Marshall, J., MIC, I, pp. 110–11)

55–II. "The above will suffice," argues now Marshall on the basis of the said comparisons," to demonstrate how wide is the gulf between the Indus and Vedic civilizations.

"And this brings us" proceeds Marshall, "to another question. Are we to assume that the Vedic followed directly after the Indus Civilization in the Punjab, or that there was an interval between them? In Chap. XXIII Prof. Langdon expresses the view that (VII) the Aryans in India are far more ancient than history has hitherto admitted.... Prof. Langdon does not seek to identify the Indo-Āryans with the authors of the Indus Civilization, but he is led by his theory on the derivation of the Brāhmi from the Indus script to infer that the Āryans must have been established in India and were in contact with those authors long before the middle of the second millenium BC. {now revised to 1750 BC.}. With this view of Prof Langdon's I must confess that I find it impossible to agree...."

56–II Marshall, on one hand, identifies the authors of the Indus Civilization with the Dāsas of the Rigveda [*MIC*, I, Preface, p. v] who were the contemporary inhabitants in the same land dwelt with the Rigvedic Aryans indulging in tribal warfare, and, on the other, opposing Langdon on the plea that the Vedic Aryans and the Indus people had not come into a direct contact. Is it a scholarly argument at all? Marshall does not appear to have read the contents of the Rigveda with a little more care, for he seems to have believed that all the Rigvedic hymns contained historical facts instead of also the elements of mythology. The Dāsas, the Dasyus and the Asuras were the figures of pre-Indian habitat of the Vedic Indo-Aryans as we have seen earlier {124–I}. Marshall identified arbitrarily the people of the Indus Civilization as the pre-Aryan Dravidians of India.

57–II. That the Harappa culture was a Dravidian institution is again not a scientific proposition. The Semitic, the Dravidian, the Bantu, the Austric or the Indo-European are mainly the linguistic terms, which in the field of historical disciplines are employed usually in the sense of the peoples speaking the languages of these divisions. We are completely in the dark about the language of its authors. The Harappans might have been the Dravidians, but in absence of a historiographically valid evidence, the precepts of the modern archaeology do not permit us to introduce them under an arbitrary stamp. There has never been a Dravidian religion distinct from the Hinduism as a reference to any standard work on the science or history of religion would show. The worship of Mother-goddess and the phallic emblems was widely practiced in the Middle East as Marshall also has pointed out (Marshall, J., 1931, p.) and at a time far anterior to that of the Harappa culture as show the occurrences of their figurines at Karim Shahir (c. 6000 BC)

and Jarmo (c. 5000 BC) in Iraq (Pallis, S. A., *Antiquity of Iraq*, Copenhagen, 1956, pp. 398-400). In India, the cult of the Mother-goddess is an archaic institution as we gather from the Tantric literature and other sources. Similarly, the 'linga' (phallus) is not a Dravidian term. It is Austric in origin (Przyluski, J., Pre-Aryan & Pre-Dravidian in India, Cal., 1929; pp. 10-1). The pipala tree (Ficus religiosa) is held sacred not only in the Hinduism and the Buddhism, but also in the Vedic religion. "aśvattha or 'horse-stand', called also *pippala* (RV, I, 164, 20) is one of India's greatest trees, the Ficus religiosa.....is mentioned in the Rig Veda (I, 135 : X, 97, 5) and the Atharva Veda (III, 6, 1 : IV, 37, 4, etc.). The gods are said to sit under it in the third heaven (AV, V, 4, 3, Chhandogya-Up. VIII, 5, 3; Kaushitaki-Up. I, 3 : (Macdonell, A. A., & Keith, A. B., *Vedic Index of Names & Subjects*, I Varanasi, 1958, pp. 43-4). If the Harappans were the Dravidians and were driven south by the Aryan 'invaders', one is wonder-struck, why are the survivals of their culture the Harappan writing, art, architecture, pottery, etc., are not traceable in the conservative institutions of the South ? The Harappan 'Dravidians' must have certainly left behind them a Dravidian substratum in the languages of their earlier habitats in the Indus valley and Gujarat. The evidence in these respects is negative.

58-II. Marshall's comparison between the Indus culture on the basis of the archaeological finds and the Indo-Aryan culture as gleaned from the indirect and incidental refer-cuces to its material aspect in the liturgical hymns of the Rigveda and the conclusions he has derived therefrom can scarcely be regarded as confirming to a proper methodological approach on his part, for, it was not acknowledgedly the Vedic literature solely that furnish us all the available information on the Indo-Aryans. The Puranas and the Epics, too, shed a lot of light, as we have seen, on these people and their institutions according to even such conservative anthorities of Marshall's time as Vincent Smith and E. J. Papson, the two authors of the well-known standard histories, *The Early History of India*, Oxford University, 1904; and *The Cambridge History of India*, I, 1921, respectively.

"The most systematic record of Indian historical tradition," writes V. A. Smith, "is that preserved in the dynastic lists of the Puranas. Five out of the eighteen works of the class, namely, the Vāyu, Matsya, Vishnu, Brahmānda, and Bhāgavata contain such lists. The Brahmānda and the Vayu, as well as the Matsya, which has large later additions, appear to be the earliest and most authoritative. Theory required that a Purana should deal with the five topics of primary creation, secondary creation, genealogies of gods and patriarchs, reigns of various Manus, and the histories of the old dynasties of kings. The last named of the five topics is the only one which concerns the historian. Modern European writers have been inclined to disparage unduly the anthority of the Puranic lists, but closer study finds in them much genuine and valuable historical tradition. " (*The Early History of India*, 1924, pp. 11-2) " : " .....the Puranas in some shape were already authoritative in the fourth century B.C. The author of the *Arthasāstra* ranks the *Atharvaveda* and *Itihāsa* as the fourth and the fifth *Vedas* (BC. I, ch. 3); and directs the king to spend his afternoons in the study of *itihasa*, which is defined as comprising six factors, namely, (1) *Purāna*, (2) Itivritta (history), (3) Ākhyāyika (tales), (4) Udaharana- (illustrative stories), (5) *Dharmaśāstra*, (6) Artha-śāstra" (*Ibid*, p. 24).

59-II. The traditional Indian view on India's pre-Buddhist (i. e. earlier than the sixth century BC) past rests principally on the contents of the Puranas, which furnish an account of the unbroken dynastic history of India from its earliest beginnings some 133

pedegrees before the Indian contemporary of Alexander the Great (336-23 BC) or Chandragupta Maurya, grandfather of Asoka (273-232 BC), down to the well-known historic dynasty of the Āndhra-S'ātavāhanas (c. 25 BC-225 AD). Two factors are noteworthy about the Puranic dynasties. Firstly, the names of the dynasts, with a few exceptions, belong etymologically to Indo-European languages, showing that they were the Aryans; and; secondly, following the pattern of the Sumero-Babylonian cuneiform chronicles, the Puranas begin their dynastic lists after the event of a great flood or the Deluge. According to the *Vaṃśānucharita* book of the Puranas, the royal power having originated from the proginitor Ikshavāku (was he originally an Akkadian Ishshakku ?) of the Solar Dynasty was first established at Ayodhya in the middle Gangetic valley and by the Lunar Dynasty at Pratishthāna (Old Jhusi at Allahabad). The etymology of the names of the earliest rulers of the these dynasties suggests that they were both linguistically and culturally the Indo-Aryans. Branches of these Aryan dynasties were soon established at Kuśasthali in Ānartta (Gujarat) on the Western Sea, at Māhishmati (Maheshwar, M. P.) on the middle Narmada, as well as further south in Dakshiṇāpatha and Aparānta (West Coast). Agastya and Paraśu-rāma were the heroes of these Aryan colonizations.

60-II. Marshall thus, as it were, manoevring through such illogical and flimsy means, gave his ruling from the imperial office of the Director General of Archaeology in India that the authors of the Indus Civilization were the pre-Aryan Dravidians who were later destroyed and driven south by the Aryan invaders. As a result of the excavations in the Indus valley, the prominent among those who received training were H. Hargreaves, D. R. Sahni, K. N. Dikshit, N. G. Majmudar, R. D. Banerji and M. S. Vats. These were India's first protohistorians who were all in the Government service and were not expected to comment on Marshall's hypotheses under the rules of discipline to be maintained during the service, and other research Institutes and Universities in India had no prehistorians or protohistorians at that time, with the result that Marshall had favourable atmosphere for a wide propaganda that the authors of the Indus Civilization were pre-Aryan Dravidians whom later the Aryan invaders destructed and drove south into the forests. Marshall thus provided the foundation for a regional myth in India, to assist perhaps innocently, the 'divide and rule' policy of the British Imperialism. "Much of the antipathy," observes Rocert L. Hardgrave, Jn., "which has arisen between the two regions (of India,the North and the South) is more the product of historical myth than of reality. Europeans and philologists, such as Sir John Marshall and Robert Caldwell have in their research and hypotheses provided the foundations for regional historical myths, which harken back to the days of former power and glory. The Dravidian nationalists, particularly, the Tamils have reconstructed a history which recalls an antiquity dating from the Indus Civilization to the powerful Tamil kingdoms of the South" [The Dravidian Movement, Bom, 1965, pp. 8-9].

61-II. The Indian prehistoric archaeology, i. e. the Indian prehistory had been experiencing a lull all this time after the work of the geologist R. B. Foote [*The Foote Collection of Indian Prehistoric & Protohistoric Antiquities*, 2 vols, Madras, 1914 & 1916] until in 1930 M. C. Burkitt and L. A. Cammiade made their discoveries in Andhra Pradesh [*Ant.* IV. 1930]. Five years after when Yale-Cambridge North Indian Expedition consisting of its leader Helmut de Terra, Teilhard de Chardin and T. T. Paterson, sponsorded by the Universities of Yale and Cambridge, the Carnegie Institution, the American Philosophical Society, etc., undertook to explore the Indian prehistory the Archaeological Survey of India had none to depute on it as its representative, because prehistory was still alien to that department.

62-II. It was not only in respect of their unscientific mode of interpreting and reconstructing India's protohistory, but also in regard to their technical methods for exploration and excavation of archaeological sites that the Director Generals of Archaeology in India evoked criticism against themselves, and the condition grew too deplorable by the time K. N. Dikshit (1937-44) assumed the office. "The Government decided," writes A. Ghosh, "to invite a foreign expert to report on matters relating to future excavations. The choice fell on Sir Leonard Woolly.....he visited 45 places, and shortly afterwards submitted his report, which was virtually a wholesale condemnation of the activities of the Department ... Among his recommendations were the appointments of an adviser on Archaeology and two prehistorians" [Ghosh, A., 'Fifty Years of the Archaeological Survey of India,' *AI*, 9, 1953, pp. 41-2].

63-II. V. D. Krishnaswamy and B. K. Chatterjee were the first prehistorians on the staff of the Archaeological Survey of India who had returned in 1940 after their trainning in England and France. The Narmada valley had much appealed K. N. Dikshit, the Director General at this time, from the view-point of finding out a clue to the correlation between the Indian protohistory and the pre-Buddhist traditional history of India, which was lacking in the case of the Indus Civilization. Dikshit was associated with the Narmada Valley Research Board that was founded in 1933 [*Ancient India*; I, i, Satara, 1936, ed., V. R. Karandikar], but could not function well after the unfortunate fatal accident to its Secretary V. R. Karandikar in the course of his explorations on the Narmada. N. G. Majumdar and V. R. Karandikar are the two martyrs for the cause of the Indian protohistory. The potentialities of the Indus valley had already been assessed by then and the time was ripe to extend the explorations to the areas lying south of it, where Gujarat had already offered great promises in the light of Foote's geological survey of the Baroda State in 1892-94 [Foote-I, 1914, pp. 191-244]. The World War II began to speak adversely on the funds for the explorations in the Archaeological Survey. The enthusiast Dikshit found out a solution to carry on this work by sponsoring expeditions in co-operation with the archaeological departments of princely states and public institutions of research. He organized under his own supervision the First Gujarat Prehistoric Expedition, 1941-42, consisting of two prehistorians, V. D. Krishnaswamy and B. K. Chatterjee, who had freshly returned from England and France after their trainning; H. D. Sankalia, Professor of Ancient Indian Culture at the Deccan Collage Post-Graduate and Research Institute, Poona, who had specialized in the pre-Muslim architecture and sculpture of Gujarat; and A. S. Gadre, Director of Archaeology, Baroda State; and three students for trainning, D. R. Patil and A. V. Naik, two students of Ancient Indian Culture from Poona, and A. V. Pandya, a student of geology from Gujarat. Gujarat Research Society, Bombay, also helped significantly. The Expedition re-examined Foote's sites and added to his work by finding out more palaeoliths on the Sabarmati and the same finds on the Mahi and the Orsang; and by excavations at the microlithic site of Langhnaj near Ahmedabad. Neither a new Harappan site besides that at Rangpur excavated by M. S. Vats, nor any evidence providing a correlation between the Indian protohistory and the traditional pre-Buddhist history of India could the Expedition discover in the course of its field-work [Sankalia, H. D., *Investigations into Prehistoric Archaeology of Gujarat*, Baroda, 1946]. Dikshit therefore turned to the Narmada and selected A. V. Pandya, who was then working in the Western Circle of the Archaeological Survey, for conducting the explorations in its valley.

"Endeavours were made during the regime of K. N. Dikshit to follow this up by encouraging Indian Universities and Institutions to participate in exploration work. For Dikshit very rightly believed that an indispensable condition was the advancement of the study of India's unknown past was the widespread extension of archaeological researches from the confines of a mere official organization into the academic activities of the Universities" [*The Story of Indian Archaeology*, 1784-1947, ND, pp. 116-7].

64-II. The successor of K. N. Dikshit, in 1944, Brigadier Dr. R. E. M. Wheeler was a prominent British museologist and archaeologist of the Roman Britain [Director of the National Museum of Wales, Keeper of the London Museum, Director of the Institute of Archaeology, the University of London : Pub., *Segontium & the Roman Occupation of Wales*, 1924; *The Roman Fort near Brecon*, 1926; *Prehistoric & Roman Wales*, 1926; *Excavation of the Prehistoric, Roman & Post-Roman Sites in Lydney Park*, *Gloucestershire*; 1932; *Verulamium*, 1936; and *Maiden Castle, Dorset*, 1943] and a popular English prose writer of an admirably vigorous and lively style, who had improved upon the earlier methods of the archaeological excavations that were developed by Pitt-Rivers, Curtius and Dorpfeld [Daniel G. E., *A Hundred Years of Archaeology*, Lon, 1952, p. 264]. However, these techniques could not find a universal application because they do not yield satisfactory results in the case of the protohistoric (Archaic, Formative, etc.) sites in the Americas, the Pacific Basin and even in India in regard to the sites at the *teris*, the shell mounds and the loessic dunes.

The exigencies created by the discovery of the Indus Civilization demanded a veteran Indologist-cum-Sumerologist to preside over the destinies of the Indian archaeology at this juncture rather than an expert in the administration of ancient monuments and museums. The appointment of Prof. Wheeler was adversely criticised in India as he himself states [Wheeler, Sir R. E. M., *Still Digging*, Lon, 1955, p. 187]. But the British Imperialism had its own views and ways in regard to the history of the subject Indians and the archaeology in India [5-7-II].

65-II. In the area of both the geographical and cultural crossing between the Dravidian-speaking South and the Indo-Aryan-speaking North that the Narmada Valley had been traditionally, A. V. Pandya was already busy with his survey for the relics of all the ages from the palaeoliths to the medieval structures and inscriptions as we gather from his published material [Pandya A. V., "Archaeological Discoveries in the Narmada Valley," *J. Gujarat Res. Soc.*, April-July, 1946; "Prehistoric Cultures discovered on the Narmada," *Proc. Indian History Congress*, 10th Session, Bombay, 1947, pp. 179-194; "Are these India's First Cities ? — Narmada Valley Discoveries throw New Light on India's Past," *The Illustrated Weekly of India*, March, 23, 1947; 'Indian History goes back by a Millenium,' *The Statesman*, New Delhi, March, 30, 1947; The Hindustan Times (Weekly Suppl.), March 23, 1947; *The Weekly Bombay Chronicle*, March 30, 1947; 'The Protohistoric Vestiges of Mahishmati and Hastinapur," *Vishal Bharat*, Calcutta, January, 1951, pp. 19-31; "Sculptures from the Narmada Valley in Gujarat," *VVRB*, I, 1, 1957; *New Dynasties of Gujarat History*, 1948; "Some Newly Discovered Inscriptions from Gujarat," *VVRB*, 1, 2, 1958, pp. 1-80, etc.] as was arranged by K. N. Dikshit in 1944. Dikshit continued to take active interest in this survey till his demise in 1946.

In the domain of protohistory Pandya first discovered 22 site on the Narmada valley in Gujarat (Broach Plain or ancient Bharu area with its capital at Bharu or Bhrigu-Kachchha or modern Broach) containing microliths that only occasionally had ribbon-flakes among them in association with, in rare cases, a tournette-turned plain red pottery on the banks of the Narmada between Chandod and the Mokhadi Falls with a high concentration in the vicinity of Garudeshwar where on the summit of its fort commanding the entrance of the river into the Broach Plain a fine site of the Middle Stone Age occurred, and on the lateritic ridges that occupied the surface of the Jhagadia and Valia taluqs of Broach District. Tells or layered sites were not encountered obviously because the houses are still built of fast-perishing bamboo, thatch and timber abundantly available from the adjoining forests in the Satpura Range.

66-II. The above state of affairs changed as soon as Pandya entered from Gujarat the Nimar Plain of the middle Narmada in M. P. From the Hiran Falls near Barwani lofty tells began to be encountered on moving towards the east. The survey was carried out as far east as Handia-Nemawar near Harda. Between the Hiran Falls and Khalghat, the tells at Chikalda, Mohipura, Bara Barda, Luhara, Khujwan, etc., yielded microliths including ribbon flakes, a block-on-red wheel-made painted pottery depicting such geometric motifs and stylized figures of the stag characteristic of the early chalcolithic pre-Indus Zhob culture {Rana-ghundai I 45-I} of northern Baluchistan in the Pakhtun country. The shell and paste bangles, pebble-foundations of the walls, lathe-turned stoneware, etc., all bore striking resemblances with the same archaeological material from the Zhob-Amri complex. The tells at Ekalwara, Chhota Barda, Sijkhera, Hatnavar, etc., belonged to a later culture as they yielded a plain red pottery with mica-sprincled surface and no stone artifacts.

67-II. Pandya hazarded the view that the pre-Indus Zhob-Amri early chalcolithic complex had crossed the Indo-Sarasvati basin in course of time on a southward move in the Peninsular India where its relics had been found on the Narmada and beyond as far south as Brahmagiri in Karnataka or Mysore. Pandya suspected if the culture did not belong to the Aryans in view of the archaeological evidence that the peasant-villages of the Zhob culture had domestic horse [45-46-I], the animal characteristic of the Aryans. The answer was lying sealed at Mahishmati, which Pandya identified with Maheshwer, 10 miles to the east of Khalghat, in view of separate mentions for Mahishmati and Omkar-Mandhata in the Puranic lists of the sacred-places on the Narmada [*Vāyu-p.*, LXXVII, 94-5; *Matsya-p.*, Revā-mahātmya; *Kūrma-p.*, Uttara, 40-3; *Linga-p.*, Revā-mahātmya; *Śiva-p.*, IV, 18; *Bhāgavat-p.*, IX, 16; *Agni-p.*, CXIII; *Brahmavaivartta-p.*, Revāmahatmya; *Nāradiya*, LXXVII; *Brahmāṇḍa*, Revā-khanḍa; *Skanda*, Revā-khanḍa; *Garuḍa*, Revāmahatmya; *Vasiṣṭha-saṃhita*, X-XIII; etc.]; the medieval temples at Maheshwar mentioning that its name was Māhishmati [Diskalkar, D. B., *Inscriptions at Maheshwar*, Indore, 1947]; the find of a copper-plate of Maharaja Subandhu of Mahishmati from ancient site of Maheshwar; the recitation of the *Mahishmati-mahatmya* by the local priests of Maheshwar to the pilgrims who visit Maheshwer as one of the most sacred places on the Narmada, etc.

68-II. "According to the Puranas", wrote Pandya, "the royal power first grew in India in the Gangetic valley some 133 reigns before Chandragupta Maurya (322 BC). The capitals of the first major city-states were Ayodhya and Pratishthāna in the Gangetic valley in the east and Kushasthali in Kathiawar in the west. Bhrigukachcha (Broach or Barygaza

of the Greeks), a sea-port at the mouth of the Narmada, was also founded by the same time by the Bhrigus, whose leading personages figure in the Rigveda of c. 1500 BC. Six generations later, the Haihayas rose to prominence in Anupa or the middle Narmada valley. Mandhāta, the mighty king of Ayodhya who figures in the Rigveda, I, 122–13; etc., as a 'seer' of hymns, carried his arms to the Narmada. His son Purukutstha, who also figures in the Rigveda I, 63, 7 etc., held the Narmada valley. Muchukunda, another son of Mandhata founded a city at the strategic point where both the Vindhya and the Riksha (Satpuras) mountains came nearest to the Narmada, which a generation later was enlarged and fortified by Mahishmant ('the Keeper of the buffalo'), the Haihaya, who named it as Mahishmati after his own name and made it the capital of the Anupa country. The supremacy of Ayodhya soon waned and the Haihayas of Mahishmati rose to great power in India. Bhadraśrenya, the son of Mahishmant, conquered eastern India and built up an empire. Sahasrarjuna, the greatest of the Imperial Haihayas, drove away the Bhrigus from the lower Narmada in Gujarat to northern India. The Bhrigus then consolidated themselves. Paraśurāma, their leader, the Aryan colonizer of the West Coast, attacked the Haihayas, killed Sahasrarjuna and sacked his capital Mahishmati The Haihayas, however, rose to more power after a brief set back, forming even a greater empire that stretched from the Himalayas to the Tapti valley. The mighty kingdom of Ayodhya was shattered and its ruler Bāhu was expelled by the Haihayas. Bahu's son Sagara grew in power in course of time and was able to destroy the Haihayas and to raze Mahishmati to the ground. 93 generations before Chandragupta Maurya Mahishmati ceases to figure in the early Puranas after this event [*Proc. Ind. Hist. Cong.*, 1947, pp. 190-1].

69–II. Pandya argued that the occurrence of the names of some of the Puranic rulers of Ayodhya kingdom connected with the foundation and development of Mahishmati together with those of their ancestors as also of descendentents, for instance, Yuvanāśva ⟶ Māndhāta ⟶ Purukutsa ⟶ Trasaddasyu {92–II}, in the Rigveda as the ancient authors of hymns, shows that they were Aryans as the ethymology of their names and such terminations as —aśva suggest, and were held to have been historical personages during the middle of the second millenium BC when the Rigveda was being edited and when Babylonia was under the Aryan Kassite aristocracy and the Assuras or the Assyrirns were under the subjugation of the Aryan rulers of Mitanni. Pandya therefore held that the culture of Mahishmati, whatever in nature it may have been, should have been connected with the Puranic Aryans of the Gangetic valley.

70–II. Pandya reached Maheshwar from Khalghat on July, 1945, and found to his surprise the vestiges of an entire city-site rising into lofty tells on both the banks of the Narmada to the west of the present town yielding the same antiquities of the Zhob-Amri relationship. Thus a correlation between the Indian protohistoric archaeology or protohistory, on one hand, and the traditional pre-Buddhist history of the Puranas, on the other, was first established in the Indian archaeology by A. V. Pandya. Dikshit was now no more in the world.

71–II. Pandya gave the name the Peninsular Chalcolithic Civilization to the Puranic Aryan culture of his discovery that had spread by the way of northern Baluchistan all over Peninsular India and called its variant in the Narmada valley the Narmada culture.

72-II. Pandya had no funds for large-scale excavations nor means of much publicity. He continued his work and discovered a major site of the Narmada culture at Nagda in M. P. which yielded also a bichrome ware reminding of a similar one from the pre-Indus level at Amri in Sind [Pandya, A. V., 'The Discovery of Prehistoric Nagda' *Times of India* : Hindustan Times 15-1-50 ; *Vishal Bharat*, Jan, 1951, pp. 19-31; Nagari Pracharini Patrika, LVI, 2, 1951, pl. I, p. 116; etc.]

73-II. As regards the methodical approach to the interpretation of the archaeological and related data, Dr. Wheeler seems to have belonged to the school of Sir Cyril Fox [*Personality of Britain*, 1932] who was, in his turn a follower of Paul de la Blache (1861–1905), the founder of the Geographical School of the French Historians { 220-I }, as becomes evident from the question he posed in 1946, 'Where is the Personality of India' [*AI*, 2, 1946, p. 122]. It was answered a decade after by Prof. B. Subbarao [*The Personality of India*, foreword by Sir Mortimer Wheeler, Baroda, 1956] though efforts in this direction had already been undertaken many years ago [Holdich, T. H., *The Gates of India*, Lon. 1907 : Mukerji, Radhakumud, *Indian Shipping*, 1912 : Vidyalankar, Jaichandra, *Bharat Bhūmi aur uskė Nivāsi*, Hind., 'India & its Inhabitants', 1921 : Richards, F. J., 'Geographic Factors in Indian Archaeology, *IA*, LXII, 1932: Pithawalla M. B., *A Geographical Analysis of the Lower Indus Basin*, I-III, Karachi, 1939. *The Cultural Heritage of India* I, 1958, pp. 53-52 : Panikkar, K. M., *Geographical Factors in Indian History*, Bom, 1955]. The pit-falls of Wheeler's efforts to revive the European Geographical School of Paul de la Blache in India were twofold. Firstly, it was developed to treat the temperate Europe and this may well be the reason why Subbarao missed to include such physical agencies as the desiccation, droughts, the rise in humidity, erosion, shifting of the river-channels, inundations, earth-movements, shrinking and rising of lacustrine levels and water-tables, marine transgressions and recensions and such human and biological factors as invasions, immigrations and migrations, deforestation, devastation, crusades, pestilence, locust swarms, irrigation, etc., to include in his list of the forces of the mechanics of history. Secondly, this school of methodical approach had generally become obsolete elsewhere when it was being introduced into India.

74-II. So the first pit-fall of that Indian archaeology which has developed under the Archaeological Reforms is that the tools which the archaeological profession in India has today with it for the interpretation of protohistoric data are outdated by three decades { 221-231-I }, when history is looked upon more as the fourth dimension of anthropogeography and archaeology mainly as palaeo-anthropology.

75-II. The second pit-fall is unfortunately connected with the ethics of scientific research and scientific writings. The general procedure in this respect in India, like elsewhere, is that the author should present his findings and their details as a contribution forming the last link in the chain of the previous work. We have before us three articles from the pen of Wheeler on the three major excavations which he conducted in India ['Arikamedu: An Indo-Roman Trading- Station on the East Coast of India', *AI*, 2, 8946, pp. 17-124; 'Harappā 1946: The Defences & Cemetery R 37' *AI*, 3 1947, pp. 59-130; 'Brahmagiri & Chandravalli 1947: Megalithic & other Cultures in Mysore State', *AI*, 4, 1947-8, pp. 180-310]. " Southwards from Calcutta", writes Sir Wheeler in his autobiography " I made to Madras...... a Dr. Aiyappan who became a good friend of mine--I penetrated into the Goverment Museum...... In a work- shop cupboard my hand closed upon the

neck and long handle of a pottery.... A wine jar from the Mediterranean ... its presence indicated almost infinite possibilities. It had been found, said Aiyappan, on a site near Pondicherry in French India, where he and others had been carrying out some trial excavations" [*Still Digging*, 1955, pp. 193-4]. Turning to Wheeler's article on Arikamedu which he published nine years earlier than this statement, we find that the learned archaeologist had not at all mentioned Aiyappan's contribution which had inspired and led him to undertake further excavations at the site, though he had referred to the work of G. Jouveau-Dubreuil, Brother L. Faucheux and R. Surleau [*AI*, 2, pp. 21-2]. In his article on Brahmagiri and Chandravalli, the stratigraphic sequence which Wheeler elaborated as a result of his excavations was originally found by M. H. Krishna ['Prehistoric Deccan', Presidential Add. to the Section of Anthrohology & Archaeology, *Proc. Indian Science Congress*, I, Baroda, 1942]. "This high antiquity for the Bellary Neoliths "writes V. D. Krishnaswamy," postulated by Paterson has received confirmation from excavation made by Krishna at Chandravalli and Brahmagiri...At Chandravalli below the thin Sātavāhana layer there was found a Mauryan layer passing down into a prehistoric Iron Age stratum.... Below this, at a depth of 12 feet from the surface a Neolithic stage was met with. This evidence has been supplemenled at Brahmagiri where a full-blooded Neolithic, passing down into a weaker phase of the same, a crude Microlithic industry associated with pottery appeared. This evidence was thought to take the Neolithic beyond 2000 BC. The trend of this evidence by Krishna to be confirmed at Maski....., where a similar set of industries appears to have come out in excavations" ['Stone Age India', *AI*, 3, 1947, p. 39]. Wheeler has unfortunately, though certainly innocently, tried to descredit Krishna of the worth of his work [*AI*, 4, p. 184]. However, the credit of pioneering a chronological frame-work for the past of early South India goes indeed to M. H. Krishna and none else.

76-II. "The distribution of microlithic industries in India", writes Wheeler in the same article on Brahmgiri and Chandravalli [*AI*, 4, p. 299], "was tabulated in 1938 by Col. D. H. Gordan[1] (1-*Man*, 1938, no. 19), and the only notable additions are the Gujarat sites excavated by Dr. H. D. Sankalia[2] (2-*Investigations into the Prehistoric Archaeology of Gujarat*, etc.), Maski in Hyderabad State[3] (3-*Ann. Rep. Arch. Dept. of the Nizam's Dominions*, 1935-36, etc.), the northern bank of the Narbada north of Rajpipla {no authority or source of information is quoted in this case exclusively-Author}, Sawerpura {correct form is Sawerpuram according to earlier references} in the Tinnevelly[4] (4-A. Aiyappan in *Spolia Zeylanica*, XXIV, 1945, pt. 2) district {the statement is incorrect, the site was originally discovered by R. B. Foote as early as 1883, *The Foote Collection of Indian Prehistoric & Protohistoric Antiquities – Catalogue Raisonné*, Mad., 1914, p. 1, etc.-Author}, Jalahalli near Bangalore[5] (5-K. R. U. Todd, *Man*, 1948, no. 27), and Brahmagiri itself." It is strange why the learned archaeologist has not quoted the authority through which he may have, if it was not his own discovery, received the information about these important sites on the Narbada, where, as he wrote elsewhere, "....the most casual collector can readily fill his pockets with these small flakes and implements" [*Early India & Pakistan*, Lon, 1959, p. 70]. He has repeated this omission in one of his subsequent works [*supra*, fig. 14, & pp. 183-4].

77-II. If some one interpretes this silence as meaning indirectly that the discovery was Wheeler's own, then a paper entitled, 'Prehistoric Cultures discovered on the Narbada' published a year earlier than that of Wheeler [Proc. Indian History Congress, 10th Session, 1947, Bombay, pp. 179-194] perhaps comes in the way. Although it was not certainly

intended so, this way of treatment of the contributions of the previous workers exercised a demoralizing effect on the minds of the many of the budding Indian archaeologists for whom Dr. Wheeler's these three writings set a pattern to follow. The ethical decline grew soon to the understanding among many archaeologists that if one fails to manage to omit his predessor, the latter should at least be descredited by any means, just as the authors of the monumental work *The Excavations at Maheshwar & Navdatoli* seem to have done in their Preface. p. IX. It is again strange why these eminent archaeologists have been omitting the above article on the explorations on the Narbada introducing for the first time the protohistoric mounds at Maheshwar all throughout their writings on the subject even when the bibliographies from the proceedings of the sessions of the Indian History Congress are published by them [Sankalia, H. D., 'Mahishmati & Maheshwar,' *Journal of Indian History*, XLI; 3, Dec., 1963.]. It shows how much deeper the rot has penetrated into the fabric of Indian archaeology in certain circles. This morbid tendency exposes that these authors are doubtful about the scientific worth of their own work and therefore seeks to raise its standard by falsely belittling and descrediting or omitting the contributions of predecessors and others. Here lies the weakness of the second item of the Archaeological Reforms in India that took place during Prof. Wheeler's time.

78-II. Prof. R. E. M. Wheeler turned next to the Indus Civilization and resumed the excavations at Harappa in 1946. In the course of his interpretation of the data he advanced a very controversial theory according to which it was the Vedic deity Indra who had razed the Indus cities and destroyed their great civilization ['Harappa 46,' *AI*, III, 1947, pp. 82–3], to which he still seems to stick ['The Civilization of a Subcontinent,' *The Dawn of Civilization*, ed., Piggot, S., Lon, 1961, p. 249], without taking into consideration: firstly, the general archaeological hiatus occurring between the Indus and the Painted Grey Ware Culture {104-I, 2}; secondly, the mythological aspect of the exploits of Indra in the Vedic hymns and the well-known fact of the Middle Eastern archaeology that Indra was mentioned as a god or mythological figure in the contemporary cuneiform records from Boghazkoy [Winckler H., 'Vorlaufige Nachrichten über die Ausgrabungen im Boghazkoi in Sommer 1907,' *Mitteilungen der deutschen Orientgesellschaft*, XXXV, 1908 etc.]. "The recent excavations of Harappa," wrote Wheeler, "may be thought to have changed the picture. Here we have a highly-evolved civilization of essentially non-Aryan type now known to have employed massive fortifications, and known also to have dominated the river-system of north-western India at a time not distant from the likely period of the earlier Aryan invasions of that region....On circumstantial evidence, Indra stands accused" (*op. cit.* and quoted by S. Piggot, *Prehistoric India*, 1950, pp. 262–3). This hypothesis callapses like a house of cards on reference to the above Bogazkoi archives {107-I, 115-I, 3, Fn 23} in which Indra is mentioned as a mythological figure at the time approximating the the end of the Indus Civilization in northern India. Even before, "The precursors of the Aryan invaders," writes G. V. Childe, "may be found among the Kassites {1746-1171 BC}....in the names of their kings occur elements recalling Indo-iranian deities – S'urias (Surya), Indaš (Indra), Maruttas (Maruta) and Bugas" [*The Aryans*, Lon, 1926, p. 18]. Thus even a couple of centuries before Indra was imagined by Wheeler to have destroyed the Indus cities, he had already become a figure of mythology in the far off Babylonia.

79-II. By 1953 when Sir Wheeler's work *The Indus Civilization*: a supplmentary volume to the Cambridge History of India, was published, it had already become known that between the Harappa Civilization and the succeeding Painted Grey Ware Culture ascribed to the authorship of the Aryans, an archaeological hiatus { 104-I, 2 } prevailed [Lal, B. B., "Protohistoric Investigations" *AI*, IX, 1953, p. 96], demonstrating the two peoples had never come into a direct contact during the downfall of the Indus Civilization. However, Sir Wheeler insisted on his theory of 1946. "On circumstantial evidence such as this," observes Sir Wheeler," considered in the light of the chronology as now inferred, Indra stands accused....it seems better, as the evidence presents itself, to accept the identification and to suppose that the Harappans in their decadence, in the sixteenth or fifteenth century BC., fell before the advancing Aryans in such fashion as the Vedic hymns proclaim; Aryans who nevertheless, like other rude conquerors of a later age, were not too proud to learn a little from the conquered. A provisional dating of 2500-1500 BC. for the Indus civilization responds consistently to the current tests" [*The Indus Civilization*, 1953, pp. 92-3].

80-II. Both Sir John Marshall and Sir Mortimer Wheeler have indeed been great archaeologists of their times and have left a record of a brilliant career in India, but so far as the Indian protohistory is concerned, they have failed to make the Indus Civilization speak for itself in scientific terms. It often appears from their writings, as we have seen, that either they could not prepare themselves for their successful transition from the European classical archaeology to the archaeology of the civilization of India well in time, or they acted innocently as the archaeologists of the British Imperialism in India who must follow in the footsteps of James Mill { 6-II } and M. Elphinstone { 7-II } in the interpretation of the data on India's past.

81-II. The unfortunate legacy which Sir Mortimor Wheeler has left in India is both methodologically and ethically a weak type of archaeological trainning which in the majority of cases has failed to deliver goods against its very high cost, perhaps highest in the world for each published page of reports and study.

Sir R. E. M. Wheeler was succeeded as the Director General of Archaeology in India by Dr. N. P. Chakravarti, the Epigraphist of the Survey, who had hardly anything to do previously with the applied archaeology, the preservation of monuments, excavations, etc., for which the Survey was instituted.

82-II. A. V. Pandya, now working in the Tapti valley, discovered an important town-site of the Narmada Culture at Prakāshā on the Tapti near Nandurbar, which is mentioned in the Kumārapāla-charita of Jayasiṃha Suri as the capital of the Abhīra kingdom (Gavali Rājya or Khandesh) in December, 1954, as the following text of a news-item published in the *Hindustan Times*, New Delhi, dated 29th, December, 1954, p. 7 (also in the Times of India, the Free Press Journal, the Hindustan Standard, etc.) shows :—

"ARCHAEOLOGISTS DIG UP 3000-YEAR-OLD TOWN IN WEST KHANDESH DIST.

Ahmedabad, December 27

The site of an ancient town, about 3000 years old, has been discovered at Prakasha in West Khandesh of Bombay State by Shri A. V. Pandya, Director of the Institute of Archaeology, Anand.

" This is the first site of an ancient civilization discovered in the Tapti valley, but two more ancient towns were found earlier by Shri Pandya at Maheshwar or the Puranic Mahishmati on the Narmada and at Nagda on the Chambal near Ratlam. "

" The ancient mounds at Prakasha overlooking the river Tapti on the northern bank attain a considerable height. In the course of his investigation at the site Shri Pandya found first the 'Red Polished Pottery' of the early centuries of the Christian Era. "

" The lower levels of the mounds exposed by the ersoion yielded the 'Northern Black Polished Pottery' of the Mauryan period and a red mica-sprinkled ware. Still lower down were found the 'black-on-red' painted pottery of the pre-Mauryan times in association with the stone antiquities known as 'microliths'. This painted pottery of the ancient times found at Prakasha is similar to that discovered previously by Pandya at Nagda and Maheshwar."

Pandya, as the information goes, read a paper on his protohistoric finds from Prakāshā and exhibited them at the 17th session of the Indian History Congress held at Ahmedabad a few days after his discovery. Dr. N. P. Chakravarti, Mr. A. Ghosh and the then Suprintendent of the South-Western Circle of the Archaeological Survey of India, who also attended the Conference, met Pandya and gathered from him all the information about the discovery of Prakāshā and the location of the site, and ordered there and there the above Superintendent to undertake large-scale excavations at Prakāshā immediately on his return to Aurangabad.

83-II. Thus N. P. Chakravarti too evinced interest in the protohistoric research. Some five months later a press-communique was issued from New Delhi which read as under, as published in the *Free Press Journal*, dated 17th May, 1955, p. 5 :-

"ANCIENT SETTLEMENT FOUND IN BOMBAY"

CIVILIZATION DATING FROM FIRST MILLENIUM BC.

New Delhi, May 15.

" Remains of a settlement dating from the first millenium B.C. to 7th century A.D. have been unearthed during recent excavations at Prakash in West Khandesh District of Bombay State, it was learnt from an official source here. "

" Excavations here have exposed a 55-feet deep occupational strata which unfolds four cultural periods. "

" The earliest settlers (about the first millenium BC.) on the site used microliths. The ceramic industry comprised a distinctive painted red ware. The second period 5th-1st century BC represented a full-fledged iron using culture characterised by the use of the black and red ware in association with iron objects. The succeeding period, dating from about the first century BC to the fourth century A.D., was marked by the presence of the red polished ware which is found widely distributed in Western and Central India." "

84-II. It was remarkable that the name of the discoverer had been omitted. It was a crime in the ethics of science. The deterioration progressed further. Beginning with the persons working in the Universities and other institutions who could not afford to speak against their being parasited and exploited, it began to strike the old institutions of high reputation by 1954.

83-II. In the Special Jubilee Number of the Ancient India, IX, for 1953, in an article on the Indian prehistory, the credit which was due to Prof. Dharani Sen of the Calcutta University in respect of his researches which he mentioned in the course of his Presidental Address for the Section of Anthropology & Archaeology, entitled the 'Lower Palaeolithic Culture-Complex and Chronology in India', Indian Science Congress, 41st Session, Hyderabad, was omitted. As the report goes, a number of letters in this respect were addressed to the Editor of the *Ancient India*, New Delhi, of which the latter did not even acknowledge the receipts. But when two years after the matter was proposed to be placed in the Loksabha, the Editor ultimately rushed with a special 'Erratum' slip for the *Ancient India*, XII, 1956, reading as under :—

"Ancient India No. 9

> Page 62. As references to paragraphs I and 3, add: Dharani Sen, 'Lower palaeolithic culture complex and chronology in India', Presidential Address, Section of Anthropology and Archaeology, Forty-first Indian Science Congress, Hyderabad, 1954.

The omission was due to a regrettable editorial oversight."

85-II. When the Archaeological Survey published the account of its excavation at Prakāshā in the *Indian Archaeology, 1954-55-A Review*, p. 13-4, it had authentically omitted the name of the man who had discovered it and had already published his accounts of researches and from whom both N. P. Chakravarti and Amalananda Ghosh had personally acquired all the information about his discovery, at Ahmedabad {80-II}. The same thing was done in the next issue (1955-56) of this annual when the name of A. V. Pandya, the discoverer of Nagda, about which he had already published articles years before the Archaeological Survey of India undertook their excavations there.

86-II. The large-scale and complete excavations for which a commendable start was made by Wheeler from Arikamedu in 1945 [*AI*, II, p. 22] have since 1954 been relegated to serve mainly the purpose of the trainees of the School of Archaeology who are taken from site to site every year or so and thus excavations remain incomplete both vertically and horizontally and in a number of cases, as in the case of Nāgdā, better mounds have been left out. The earliest sites of India's traditionl history, for example, Ayodhyā (Hanumangaḍhi and surrounding tells) and Pratishṭhāna (Old Jhusi at Allahabad) where the Northern Black Pottery, which marks at present a horizon between the Proto-history and History of India, occurs even on the surface in appreciable profusion. The site of Nāvḍā-ṭoli marks that of just a suburb of the Puranic Māhishmati and the proto-historic mounds of this great capital of the Anupa country in middle India have not yet been touched by the spade. There does not appear to be a sensible scheme behind the selection of sites and mounds. The oldest sites in the Gangetic valley could hardly be found on the present channel of the Ganga, as we know from the instance of Hastināpur, and therefore must be sought for on the older or the *buḍhi* beds or on the higher terraces of the sacred river. It is difficult to understand why the officers of the Archaeological Survey of India have undertaken to change the geographical names of archaeological places in their own arbitrary way, for instance, the name of the Chautang has been changed to the Drishadvati as its current name [Ghosh, A., 'Explorations in Bikaner', App. C, *An Anthropolo-*

gical Reconnaissance in West Pakistan, ed., Henri Field, Peabody Mus., 1959, pp. 212-3] and that of Prakāshā to Prakash [I Arch, 1954-55, p. 13]. It is again difficult to understand why the excellent site of Sothi on the Chautang near Nohar which has given a name to a distinct and very import culture of the 'Dark Period' [Wheeler, R. E. M., *EIP*, 1959, pp. 124] has been allowed to be ploughed down completely beyond recognition and the important *thela* has now disappeared. For the semi-tropical savannah and further east in the humid Ganga-Brahmaputra valley where such perishable materials as wood, bamboo, bark, gourds, bone, horn, skin, etc., provided raw materials for the human equipment, the methods of the British and the Middle Eastern archaeology hardly yield satisfactory results and therefore in this respect we should also try to derive advantage from the American archaeology [Willey, G. R., and Phillips, P., *Method & Theory in American Archaeology*, Chicago, 1958, etc.]. The Under-water archaeology and the aerial reconnaissances for archaeology are still unheard of in India. The Indian archaeology has its own peculiarities and unfortunately we have not yet a Manual of the Indian Archaeology.

87-II. Universities are becoming more and more alive to research in archaeology and cultural anthropology. Important work is being conducted at a number of protohistoric sites by the University of Allahabad [Sharma, G. R., *The Excavations at Kaushambi*, 1957-59, Allahabad, 1960 : *I-Arch* 1953-54, p. 98 —— 60-61, p. 33 : Onaur, Unchadih, Upraura in Allahabad and Draupari-ghat *tell* nearby, *ibid* 60-61, p. 34-4; etc.]; Hindu University, Varanasi [Narain, A. K., 'Ancient History of Varanasi in the light of Rajghat Excavations,' *Extension Lectures*, Banaras Hindu University, 1962-63 : *I-Arch* 57-58, p. 47; 60-61, p. 35; 61-62, p. 3, Banke-Siddha, Panasa, Lachhagir, Magandiwana, Pancha-Patrari, Siddhapura, etc. pp. 52-5]; Patna Universsty [Antichak, *I-Arch* 60-61, p. 3-4; 61-62, p. 3; 62-63; p. 3], Calcutta University [On the upper Narmada, *I Arch* 60-61, p. 13-7, and previous work in Orissa and Bengal], Saugor University [Eran, *I Arch* 60-61, p. 17]; Muslim University, Aligarh [Atranjikhera, *I Arch* 60-61, p. 35]; Madras University [Chingleput & Salem dists, *I Arch* 61-62, p. 25]; Nagpur University [Kaundinyapur, *I Arch* 61-62, p. 29], Gauhati University [Sharma, T. C., 'A Note on the Neolithic Pottery of Assam,' *Man*, N. S, II, I, 1957, pp. 126-8] and others. Certain State-level departments of archaeology are also doing commendable work, for instance, the Department of Archaeology & Museums, Rajasthan State [Ahar, *I-Arch* 55-6, p. 11 : Bharatpur & other dists, *I-Arch* 61-62, p. 35 : *The Researcher*, A Bulletin of the Dept. of Archaeology & Museums, Rajasthan Govt; Jaipur, Vols. I, II, III-IV 1963-4]; the Dept. of Archaeology & Museums, Madhya Pradesh State, Bhopal [Dhanora, *I-Arch*, 56-7, p. 35 : Gwalior, Damoh, Mandsaur and other dists, *I-Arch*, 57-8, & 59-60]; the Directorate of Archaeology, West Bengal, Calcutta [*Exploring Bengal's Past*, Dasgupta, P. C., 1966 *Pandu-Rajar-Dhubri*, etc.], Dept. of Archaeology, Andhra Pradesh, Hyderabad Allchin, F. R., *Piklihal Excavations*, 1960; etc.], Dept. of Archaeology, Mysore State, Mysore [Yalleshwaram, *I-Arch* 57-8, p. 9 : T. Narsipur, *I-Arch* 61-2, p. 35; etc.], Dept. of Archaeology Maharashtra [Dikshit, M. G.] and many others.

88-II. Turning to Pakistan, we find that researches in protohistoric archaeology and cultural anthropology are proceeding in a satisfactory manner and the studies are now bringing Baluchistan and Afghanistan into prominence as the bridges between Indian subcontinent, on one hand; the Middle East, the Inner Asia and the Caspian Basin [Leach, R., 'Brief History of Kalat, *JASBeng*, CXXXVIII, 1843 : Postans, T., 'Routes through Kachhi Gandava,' *JRGS*, XIV, 1844 : Twemlow, G. 'On Flint Cores from the Indus,' *Geol. Mag.* N. 1867;

Mockler, E., 'On Ruins in Makran,' *JRAS*, IX, I, 1876 : Garwood, G. F., 'Notes on the Ancient Mounds in the Quetta Dist.' *JASBeng*, LVI, I, 1887 : Sandeman, Sir R., 'Tour in Baluchistan,' *Proc. Roy. Geog. Soc*, XIII, 1891 : Oldham, R. D., 'Sub-Recent & Recent Deposits of the Valley-Plains of Quetta, Pishin & Chaman,' *RGSI*, XXV, I, 1892 ; F.H. Andrews, '*Antiquities & Ethnography of Las Bela & Mekran*,' Cal. 1894 : Noetling, F. W. 'Fauna of Baluchistan,' *Pal. Ind*, ser. 16, I, i-iii, 1895-7 : Floyer, E. A., *Unexplored Baluchistan*, Lon. 1882 : Modi, J. J., 'The Country of Makran, its Past History,' *East & West*, May 1904 : Stein Sir A., *Rep. Arch. Survey Work in N. W. F. Province & Baluchistan*, Peshawar, 1904-5 : Vredenburg, E. W., 'A Geological Sketch of the Baluchistan Desert,' *MGSI*, XXXI, 2, 1901; 'Geology of Sarawan, Jhalawan, & Mekran & State of Las Bela,' *RGSI*, XXXVIII, 3, 1909 : Pilgrim, G. E., 'Tertiary & Post-Tertiary Fresh-Water Deposits of Baluchistan & Sind,' *RGSI*, XXXVII, 2, 1908-9 : Buller, R. H., *Horses & Horse-Breeding in Baluchistan*, Lon, 1905 : Howard, G. L. C; 'Wheats of Baluchistan, Khorasan & Khurram Valley; *Mem Dept. of Agri*, Bot. Series, Bom. VIII, I. 1916 : Hargreaves, H., *Excavation Baluchistan*, Cal, 1925; *Excav. in Baluchistan at Sampur, Mastung, Sohr Damb & Nal*, Cal 1929 : Stein, Sir A., *An Archaeological Tour in Waziristan & Northern Baluchistan*, Cal, 1929; *An Archaeological Tour in Gedrosia*, Cal, 1931; Skrine, Sir C. 'The Highlands of Persian Baluchistan,' *GJ*, LXXVIII, 1931 : Fabri, C. L., 'On the Track of Stone Age Man in Persian Baluchistan,' *Asia*, XXXIV; 8, 1934; Majumdar, N. G., *Explorations in Sind*, Cal, 1934 : Barger, E., & Wright *Excavations in Swat & Explorations in the Oxus Territories of Afghanistan*, Cal, 1941 : Janjua, Nazeer A. 'The Cultivators of Baluchistan', *Indian Farming*, I, 12, 1940 : Joseph, P., The Near East & the Indus Valley, *JUBom.*, XII 4, 1944 : Piggot, S., 'Dating the Hissar Sequence – the Indian Evidence', *Ant*, XVII, 1945; 'The Chronology of Prehistoric Northwest India', *AI*, I, 1946; 'A New Prehistoric Ceramic from Baluchistan', *AI*, III, 1947 ; Farhat-Ullah, Khan, 'Climate of Baluchistan', First Pakistan Science Conf., 1949 Gordon, D. H., 'Sialk, Gujan, Hissar & Indo-Iranian Connections', *MLI*, XXVII, 3, 1947; 'The Prehistoric Cultures of the Zhob', *Man*, ILVIII, 1948; 'The Stone Industries of the Indo-Iranian Border', *AI*, X-XI, 1954-5 : Krishnadeva & McCown, D. E., 'Further Explorations in Sind, 1938', *AI*, V, 1949 : Cardi', Beatrice de, 'On the Borders of Pakistan : Recent Explorations' *JRIPCS*, XXIV, 2, 1950, 'A New Prehistoric Ware from Baluchistan', *Iraq*, XIII, 2, 1951 : Fairservice, W. A., Jr., 'New Discoveries from Baluchistan', *Arch*, V, 2, 1952; 'Preliminary Report on the Prehistoric Archaeology of the Afghan-Baluch Areas', *American Museum Novitates*, No. 1587, 1952; 'Excavations in the Quetta Valley, West Pakistan', *Ibid*, Anthrop. Papers, ILV, 2, 1956 : Field, H., *Ancient & Modern Man in SW Asia*, Univ. Miami, 1957 : Khan F. A., 'Fresh Side-lights on the Indus & the Bronze Age Orient', *AR Inst. Arch.*, Lon, 1955 : Matheson, Sylvia, 'Progress of Pakistan's Archaeology Dept', *JRIPCS*, XXXI, I, 1957; Shakur, M. A., 'The Indus Culture', *Museums Jonrnal, the Museums Asso. Pakistan*, Peshawar, VIII, 1955 : Field, Henri, *An Anthropological Reconnaissance in West Pakistan*, 1955, Peabody Mus. Camb., 1959 : Ikram, S. M., ed., *The Cultural Heritage of Pakistan*, Ox, 1955 : Khan, F. A., *Kot Diji*, 1957-58, Karachi; *Pakistan Archaeology*, I, 1964, Dept. of Archaeology, Ministry of Education, Govt. of Pakistan, Karachi : Ahmad, K. J., 'Prehistoric Pakistan', *Pakistan Review*, XII, 1964 : Baig, Mirza M., 'A Chronological List of Excavations carried out in Pakistan', Museum Journal, Pakistan, XVI 1964 : Dales, G. F., 'The Mythical Massacre of Mohenjo-daro', *Expedition*, VI, 3, 1964 : Dani, A. H., 'Prehistoric Pakistan', *Asian Perspectives*, VII, 1-2, 1963 : Bacon, C., 'Bridge to the Ancient East; *Vanished Civilizations*, Lon, 1963, pp. 251-78 Raikes, R. L., 'New Bichrome Ware from the Plains of Baluchistan', *East & West*, XIV, 1963 : Dales, G. F., 'New Investigations at Mohenjodero' *Archaeology*, XVIII, 2, 1965, etc.] on the other.

89-II. It has been noticed earlier how the period of the Mahābhārata War is possibly correlatable to an appreciable extent with the dawn of the Ferric Revolution in Northern India by the 13th cent BC or c. 1300 BC [51-I, 41-II]. Yudhishthira, the Pāṇḍava ruler, and Krishna, an elected king of Ānartta-Surāshtra (Gujarāt), the two of the heroes of the great war that divides the Puranic dynastic lists or vaṃśanucharita into an early and later (future) periods, coinciding with the end of the Dvāpara and beginning of the Kali-yuga of the Indian system of chronology, were 94th in descent from the legendary proginiter Manu Vaivasvat, [*AIHT*. p. 148], the hero of the Indian Flood legend [S'atapatha-brāhmana, I 8I; Mhb., Vana-p., CLXL-CLXLI, Matsyopākhyana: *Matsya-p*., I; *Agni-p*., I; *Padma-p*., XXXVI; Vishnu-p., V. 10-VI. 3; *Bhāgvata-p*., VIII,24; XII,8; *Skanda-p*., Vaishnava-khanda, Purushottama-mahatmya; *Bhavishya-P*., Pratisarga-parva, IV; *Kalika-p*., XXV; Shastri, Dr. Suryakanta, *The Flood Legend in Sanskrit Literature*, Del. 1950]. If our plausible guess of identifying Ikshavāku, the eldest son of Manu who founded the Indo-Aryan Solar dynasty (the etymology of the majority of names of the persons of this dynasty demonstrates their Indo-Aryan identity) at India's first city-state of Ayodhyā, with an ishshāku from Akkadian Babylonia has any substance, we may infer that having been impelled by the inner human urge of altruism an *ishshaku* during Akkadian times may have planned to introduce the Urban Revolution in India. He may well have become Ikshavāku in India. Pururavas, the founder of the Lunar dynasty at Allahabad (Pratishthan, Old Jhusi) who lived a step later, is stated in the Puranas to have originally belonged to the Asura-country [Bhagvaddata, Pandit, *Bhārata-varsha-ka-Itihasa*, Hist. of India, Hindi, Model Town, V. S. 2003; p. 51]. The Urban Revolution which Ikshavaku seems to have introduced in India was essentially of a Middle Eastern pattern characterized by writing and ziggurat-temple-town complex controlled and parasitized by a priest-soldier combine [73-I]. India had already been developing the elements of civilization much prior to this event and it was these elements which, according to the Sumerian tradition, were carried from the land of Dilmun by Ea, the Sumerian god of the elements of urban life, that the Urban Revolution was pioneered by Sumer [45, 76-II, Fn. 14], and later it came to India in a full-fledged Middle Eastern pattern.

90-II. We have already seen [526-I] that there is an inherent anagogic inner urge in man which impel him to do good to others without remuneration (altruism) and this factor (together with that for exploration because man wants to become the ommiscient) seems to have mainly been instrumental in the diffusion of the common traits of civilization from time to time all over the world, rather than an urge to dominate and exploit others. The diffusion of culture has in this manner encircled the globe more than once. The stone blade industry of the Indo-Atlantic community spread all over the Old World and to America through eastern Siberia and Alaska. The horticulture or burn-and-slash cultivation of the Indo-Pacific community was the first productive economy that was diffused to all the continents except Australia together with the polished-axe or celt, the pig and the myth of the Great Serpent. The propogation of the Urban Revolution and its accompaniments, the ziggurat-temple-cum-town complex controlled by a parasitic priest-soldier combine, and the Flood legend by the Indo-Atlantic community, had proceeded in the Indo-Pacific realm through three movements of the Aryanism; firstly, by the Puranic Indo-Aryans and the heresy of Akhnaten in Egypt [1380-1363 BC, 111-2-L] was one of its results; secondly, by means of the Buddhism; and thirdly, through South Indian Hinduism. The dissemination of the megalithic mounments all over the world is still a mystery to us as regards its authors and aims. The spread of the Christianity and Islam was also due to altruism.

91-II. We may not be perhaps too wrong in tracing the origin of the Urban Revolution and together with that of the kingship in India to the Akkadian sources, because, apart from the superficial phonetic analogy between the terms the *ishshāku* and *Ikshovāku*, the occurrence of the episode of the Flood in the Babylonian and the Indian traditional dynastic lists and the archaeological evidence establishing ties between protohistoric Indus Civilization and Akkad or the Babylonia of the Akkadian period, etc., too, lend some support to the inference.

THE SUMERIAN PARADISE NITUK (DILMUN) AND INDIA

92-II. There are some noteworthy hints which point out a possibility of India's contribution to the development of the urban life or the civilization proper in the land of Babylonia. "When we first encounter Babylonian {Sumerian} civilization," writes L. Spence, "we find it grouped round about two nuclei, Eridu in the south and Nippur in the north ....A more civilized deity held sway, at Eridu, which was the home of Ea or Enki. From the water of the Persian Gulf, whence he rose each morning, he brought knowledge of all manner of crafts and trades, arts and industries, even the mystic and difficult art of impressing written characters on clay" [*Legends of Babylonia & Assyria*, Lon. 1916, pp. 14-5]. "According to the Sumerian tradition," states M. Jastrow, jr." the port of Eridu was their earliest city where 'rulership had descended from heaven' {Dilmun}. Eridu was the seat of Ea, the fish-god who, ruled the sea and exerted beneficient influence. As the god of arts, he protected humanity and taught man how to build, to cast metal, and to carve precious stones" [*The Civilization of Babylonia & Assyria*, 1905, pp. 11-2]." Ea, the name of this divinity, which means {in Akkadian} 'House of the Water'....In the land of Sumer, Ea bore the name of *Enki*, 'Lord of the earth.' As god of the Apsu he was also god of supreme wisdom. He presided over magic incantations and the gods themselves willingly consulted him. He was also called *Ninigiku*, i. e., the 'Lord of the Sacred Eye' or 'he whom nothing escapes'. When necessary his vigilant wisdom corrected the errors of the gods themselves. When {according to the story of the Flood recorded as an episode in the Sumerian epic of Gilgamesh} Bel {Sumerian *Enlil*, the god of winds and lord of the city of Nippur, whose weapon was deluge and who decided to drown the race of man by deluge} it was Ea who warned Uta-Napishtim (hero of the Epic of Gilgamesh) and prevented the destruction of mankind. God of knowledge....presided over men's work. Carpenters, stone-cutters, goldsmiths venerated him as their patron. Ea was sometimes regarded as the creator of man whom he had fashioned with clay. The earthly residence of Ea was the holy city of Eridu which, situated in the extreme south of the land of Sumer on the persian Gulf, had been the first city to be raised from the waters. Here Ea had his dwelling, the Ezuab" [*LEM*, p. 54-5]. The most important functions in the {Sumerian} pantheon are exercised by the divine forces presiding over the major cosmic elements. Thus Anu is the god of heaven. He reign between heaven and earth, the air is presided over by Enlil, the lord of the wind and storm. The earth is the domain of Enki. These three compose the cosmic trinity. As time passes Enki also comes to be known as Ea, 'House of Water,' since the earth is also the everlasting source of the life-giving waters of the canals, rivers and sea" [Moscati, S., *The Face of the Ancient Orient*, Lon. 1960, p. 28].

93-II. "About 3000 BC," states Pallis, "Eridu was situated near the sea {today it lies 155 miles inland}....that south and east of Eridu no mounds have been found, which shows that the landscape between the Euphrates, the Tigris and Shatt el-Hai has come

into existence later, is younger than the Babylonia of antiquity....Eridu, the oldest port known is now removed 248 km from the sea....Thus the deposits from the rivers push the coast-line in the Persian Gulf some 29 miles seaward every year, or about 3 km per century" [*A Iraq*, 1956, p. 2]. "As to the direction from which," writes H. W. F. Saggs, "the Sumerians came, theories have been very diverse. Ancient tradition, transmitted through Greek, speaks of a fish-man Oannes (Enki) who swam up the Persian Gulf, bringing with him the gifts of civilization. This tallies with the Sumerian idea as we know from cuneiform documents, since the god of wisdom, Enki was associated with the waters. Moreover, Enki, was also tutelary deity of Eridu, an ancient city....according to the Sumerian documents the first of the five cities (Larak, Bad-urdu-nagar, Sippar, Shurippak) existing before the Flood. All this tradition has been taken as pointing to a settlement of Sumer by sea from the south-east up the Persian Gulf. Furthermore, Dilmun .... is of great importance {45-I} in the earliest stratum of Sumerian religion, and it has been suggested that it represented a Sumerian cultural centre earlier even than Eridu. This likewise would imply that the Sumerians entered Mesopotamia {Iraq} by way of the Persian Gulf" {*The Greatness that was Babylon*, Lon, 1962, pp. 32-3] from Dilmun. "Geographical lists also," writes Langdon, "connect Eridu and Dilmun, a fact of special interest, since Eridu, on the Euphrates near the head of the Persian Gulf, is the most famous center of the cult of Enki, the water god. Our text affords abundant proof that Enki was also connected with the religious traditions of Dilmun. Nebo, the city god of Barsippa, was also connected with the Enki water cult, has at least eleven Sumerian titles as a god in Dilmun, hence we may suppose that Barsippa derived this deity from Dilmun. Also Zarpanit, consort of Marduk (god of the city of Babilu or Babylon), son of Enki, has seven Sumerian titles as a deity of Dilmun. ...Still more notworthy is the constant association of Dilmun with Elam and Anthan.... Astrological texts also reflect the ancient importance of Dilmun and its association with Elam, in that eclipses occurring in the third month (Sivan) portend the ruin of the king of Dilmun, and those occurring in the second month (Ajar) portend the ruin of the king of Elam" [op. cit, 8-9].

94-II. In a Sumerian creation myth [Langdon, S., *Sumerian Epic of Paradise, the Flood & the Fall of Man*, Philadelphia, 1915: Kramer, S. N., *Enki & Ninkhursag*, Philadelphia, 1945] which has come down to us from the 3rd mill. BC, the land of Dilmun or the Sumerian Paradise, is described:—

Obverse-I

5: Kür Dilmun ki-azag-gaám.. 8:-ki en-ki dam-a-ni-da ba-an-dá-a-ba. 9: ki-bi el-ám ki-bi lág-lág-ga-ām

The countay of Dilmun which is an holy place, the country of Dilmun is pure,
Where Enki with his consort {Ninkhursag, the Sumerian Mother-goddess} lay.

13: Dilmun (ki)-a ú-nag-ga (g'u) dúg dúg nu-mu-ni-bi.

14: dargu-e gü-dar-(gu)-ri mu-muni-ib-bi.

In Dilmun the raven shrieked not. The kite shrieked not, kitelike.

15: ur-gu-la sag-gi nu-ub-ra-ra. 16: ur-bar-ra-ge sil-nu-ub-kar-ri.

The lion slew not. The wolf plundered not the lambs.

24: um-ma-bi um-ma me-en nu. 25: ab-ba-bi ab-ba me-en nu.

As to the old woman, "thou art an old woman" one said not.

As to the old man, "thou art an old man" one said not.

31: nin-el-la a-a-ni en-ki-ra gù-mu-na-de-a. 32: eri-mu-e-sig eri-mu-e-sig nam mu-sum-ma-za. 33: Dilmun eri mu-e-sig eri.

Ninella to Enki her father spoke. A city thou has founded, a city thou hast founded and a fate thou hast given. In Dilmun city thou has founded.

95-II. According to the Sumerian Epic of Gilgamesh Ziusudra, the counterpart of Noah of the Bibbical Flood legend and Manu Vaivasvat of the Indian story of the Deluge, the antediluvian king of the city of Shruppak who survived the Deluge, received the eternal life and lived in Dilmun:—

Then, Ziu-sudra the king,

The preserver of the name of vegetation and of the seed of mankind, In the land of crossing, the land of Dilmun, the place where the sun rises, they caused to dwell

[Kramer, S. N., *From the Tablets of Sumer*, Indian Hills, Colorado, 1956, pp. 179-81].

96-II. Puranic vamśānucharita lists show the pedegree of the heroes of the Mahabhārata war of c. 1300 BC to be 93rd in descent from Ikshavāku of c. 2300 BC, and thus we get an average period of reign for each king to be about 11 yrs against 25 yrs to be calculated for a life in peace {42-II}. Even if we make a due allowance for the conditions of warfare among the city-states and attacks of the 'have nots', the average reign can hardly be less than 20 yrs per pedegree. It appears therefore that, like the Babylonia dynastic lists, the Puranic vamshanucharita lists, too, show a number of contemporary dynasties of various city-states to be successive in pedegree. From this veiw-point about 50 reigns of 20 yrs each, should have passed successively from Ikshavāku to Yudhisthira-Krishna.

97-II. A number of the kings of the Puranic Solar and Lunar dynasties are mentioned in the Rigveda showing that they were known as historical persons as early as 1500 BC, and therefore there can hardly be much objection historiographically to our accepting them as historical in nature. Both Ikshvāku of the Solar and Pururavas of the Lunar dynasties are mentioned in the Rigveda [RV, X, 60,4 and RV, X, 95]. The kings thus mentioned fall into three groups, viz, the Pururavas group consisting of the successive Pururavas, Nahusha [RV, VIII, 8, 27], Yayāti [RV, IX, 101, 4-6] and Puru [RV, I, 108, 10], who were 2nd, 3rd, 4th and 5th, respectively, in the order of succession from Ikshvāku of c. 2300 BC. At the rate of 10 yrs to each generation, we may say that the Pururavas group of Lunar dynasty of Patishthana flourished during 23-22nd century BC. The second was the Mandhata group of the Solar dynasty of Ayodhya of which 4 successive kings, namely, Yuvanāśva [RV, I, 122, 13], Mandhātri [RV, I, 122,13; VIII, 39,8; X, 134], Purukutsa [RV, I, 63,7] and Trasaddasyu [RV, IV, 42,18] are referred to in the Rigveda. As they were 19th to 22nd in succession from Ikshvāku according to the Puranic vamsānucharita and we may well place them at the above rate of 10 yrs per succession in 22-21 st cent. BC. It

may be recalled here that the rulers of Mandhata group were connected with the enlargement of the city of Māhishmati on the Narmada according to the Puranas [*Vishnu*-p. I. 2.9; VI 8.44]. "Mandhata had three sons," writes Pargiter, "Purukutsa, Ambarisha and Muchukunda. Tradition suggests that Mandhata or his sons carried their arms south to the river Narmada {120-I}. Purukutsa's wife was named Narmada; and a fable says that the Nāgas {foreigners} induced him through the river's mediation to destroy the Mauneya Gandharvas, who had despoiled them. Moreover, Muchukunda fortified and enlarged a city situated on the rocky bank of that river..... It was Mahishmati. The kingdom did not survive long" [AIHI. pp. 262-3]. The chalcolithic remains discovered at Mahishmati or the present Maheshwar and Navdatoli, its suburb, have given the earliest carbon-date of 2300±70 BC [Lal, B.B., *AI*, XVIII-IXX, p. 216]. The third was the Sudas group of kings.

98-II. Dilmun or Nituk was not a land of mythology. It existed in reality and both the Babylonians and Assyrians carried out maritime trade [Leeman, W. F., *Foreign Trade in the Old Babylonian Period*, Leiden, 1960, pp. 22-56] with it as late as 689 BC, just some 47 yrs earlier than S'isunāga began to rule in Magadha by 642 BC [Smith, V. A., *The Oxford Hist. of India* 1919, p. 70]. Sharrum-kin or Sargon I of Agade or Akkad in whose time (2371-16 BC) the Indus Civilization maintained its best maritime relations with the ancient Iraq as the discoveries of the Indus seals in the Akkadian layers (c. 2303-2108 B. C.) at Asmar, Ur, Kish, etc., show, claims to have exacted tribute from the maritime lands of Melukhkhā, Magan and Dilmun in one of his inscriptions (G. A. Barton, The Royal inscriptions of Sumer & Akkad, 1929, p. 109). According to one of the Omen tablets of a late period from Nineveh, "Sargon traversed the Eastern Sea and carried his arms towards the east to Elam and Dilmun" (L. W. King, Chronicles, II, p. 92). Gudea (c. 2130 B. C.) states in an inscription, "By the power of Nina and Nin-Girsu, the countries of Magan, Melukhkha, Gubi and Dilmun, rich in trees of every species, have sent him at Shirpurla, ships laden with all sorts of trees" (Inscription on statue D of Gudea Col. 4, from Lagash). Ward Sin (c. 1835-1823) refers to have repaired and enlarged a temple in Dilmnn (G. A. Barton, op. cit., p. 381). Nebuchadnezzar-I (c. 1146-1122) mentions various types of articles he acquired for *Akitu* festivals (Wadi Brissah Insc, B, VII, pp. 12-31). Sennacherib (c. 703-681) of Assyria states, 'After I had destroyed Babylon, smashed its gods and massacred its population, I tore up its soil (by the river). The masses of its soil reached Dilmun and the people of Dilmun saw them and were struck with terror and dread of Assur (the god of the Assyrians), and brought me their tribute" (O. Schroeder, KI, II, 1922, No. 122). This brings us to the dawn of Historic Period of India's past when the pre-Buddhist Mahā Janapadas were in flourishing state in the northern and eastern India and the Sisunāga dynasty was to emerge in Magadha about 47 years after (c. 642 B. C.) the destruction of Babylon (Bab. Babilu). The traders and mariners of Gujarat carried commodities to Babylon (Ind. *Bāveru*) by ships, as we gather from Bāveru Jātaka (339). They carried also peacocks and other birds, which were indeed much in demand in Babylonia as the Babylonian records themselves confess. The peacocks were required for embellishing the royal gardens and public parks (S. A. Pallis, Antiquits of Iraq, 1956, p. 662).

99-II. The weight of the above evidence led Prof. Kramer, perhaps rightly, to the identification of 'Dilmun' with the peninsular Gujarat, i. e., Saurashtra (Kāthiāwār), because, on one hand, it lies contiguous with Iraq through the coastlands of Iran, Makrān

and Sind; and on the other, it can also be regarded at the same time as lying across the Persian Gulf from Iraq. The recent efforts of the Danish archaeologist T. G. Bibby to revive F. Delitzch's [*Wo Lag Das Parabies* & Berl, 1892, p. 178] highly speculative identification of Dilmun with the little Bahrein island ('Bronze Age Cultures of the Persian Gulf,' *International Conf. on Asian Arch.*–Summary of Papers, New Delhi, 1961, pp. 28–30) where a small colony of pearl-fishers and others have had to risk their lives for a small quantity of potable water by diving into the depths of the sea in order to tap the submarine fresh–water sources every time whenever they wanted it. The Sumerians had no test for pearls and it is difficult to imagine why and how were the Sumerians attracted by the arid Bahrein to the extent of looking upon it as their paradise and the cradle of their great civilization, which provided a prototype to the Biblical conception of the Garden of Aden ? Bibby's efforts are indeed illogical and unscientific, in view of the fact that Dilmun is mentioned as the 'Land of the Rising Sun' whereas Bahrein island lies to the south of Iraq and its ancient port Ur and all other cities. "Dilmun cannot be an island," states S. Langdon, "in another passage of this same Sargon says;' The land Bit–Jakinu { the coastland of Sumer } which lies on the salt stream i. e., the Persian Gulf, { *nāru marratum* } as far as the boundaries of Dilmun as one land I ruled.' Here Dilmun and Bit–Jakin form a contiguous territory' " [*Sumerian Epic of Paradise, the Flood and the Fall of Man*, Philadelphia 1915, pp. 10].[63]

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63 – "The location of the Sumerian Paradise," writes Langdon further, "will explain also the curious geographical boundary given in the Hebrew tradition concerning the Garden of Eden. In Genesis, II, 10–14, the Hebrew preserves a geographical description which is obviously derived from Sumero–Babylonian cosmology and can be understood only by comparing the description with a Babylonian map of the world as they understood it. Fortunately such a map for early Babylonian and Assyrian cosmology exists. Here Babylon is the center of a flat circular surface, with the land Assur located to the right. On the upper edge the daughtsman indicates mountains, probably the highlands of Armenia. In the right lower corner is the city Dir and at the left bottom Bit–J'akinu or the seacoast lands. Beyond this to the south appear canals (è–*ku*) and marshes (*apparu*). In the upper left corner, *i. e.*, in the northwest, the scribe places the Hittites (*kha-at-tim*). Around this circular world flows the *nara marra-tum*, the bitter river, which is the Babylonian name for the Persian Gulf. Beyond this stream lie at least five regions or countries of whose existence the geographers had a vague monition. Let us suppose that the ancient Sumerians held the same conceptions in regard to Paradise. Around it flowed the "Bitter Stream," or the Persian Gulf, upon whose eastern bank tradition located Paradise in the land of Dilmun. Into this stream on the north flow the Tigris and Euphrates. In the far southeast the Indus flows into the Arabian Sea, which the Sumerians probably regarded as a continuation of the world encircling bitter stream and in the far southwest flows the Nile from Ethiopia into the Mediterranean Sea in which they saw the western segment of the same bitter stream. Now all this agrees admirably with the Biblical account. 'And a river issued from Eden to water the Garden and thence it divided itself and became four branches.' This river issuing forth from Eden is the Parsian Gulf and the encircling bitter stream as Sayce first saw. In Hebrew and Assyrian idiom *res nari*, 'head of a stream,' or

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100-II. Even if we insist that Dilmun was an island, then the ancient geography of the Saurashtra peninsula (ancient *Surāshṭra* of the Puranas and the inscriptions) where Kramer locates Dilmun, offers an answer, for it had been indeed an island down to the historic period of India { 8.89-I. 136-I. 8.9.24.34.45. }. The ranns (playas) of Kachchha (Kutch) form an extensive saline marshland covering an area of about 9000 sq ml between the eastern part of Sind and the island of Kachchha. It varies in width from 25-35 ml on the north to 2 ml on the east. It was certainly the bed of an arm of the Arabian Sea, raised later by some natural convulsion above its original level, and cut off from the ocean. It was a navigable lake in Alexander's time and a shallow lagoon at the date of the *Periplus* (3rd cent AD), and there are local traditions of sea-ports on its borders. Geologically, it is of Recent formation. The northern or larger or Greater Rann measures from east to west about 160 ml, and from north to south about 80 ml having an estimated area of not less than 7000 sq mls. The eastern or smaller or the Little Rann (about 70 miles east-west), which is connected with the Greater Rann by a narrow channel, 2 ml in width, covers an area of about 2000 sq ml. Between March and October, the whole tract is frequently inundated by salt water either driven by strong south winds up the Kori creek from the sea, or brought down by brackish streams. The flood-waters as they dry, leave a hard, flat surface, covered with stone, shingle, cuttlefish and salt. Owing to the effects of an earthquake in 1819 the Greater Rann is considerably higher in the center than along the edges. There is a considerable manufacture of salt and heavy chemicals at Khārāghoḍā, Kuḍā and Dhrāngadhra [IG, XI, p. 84-5]. Lying midway between the dry desert of Sindh and the moist wooded Konkan (the west Coast of India south of Bombay), Saurashtra or Kathiawar partakes of the nature of the both. It is presently a peninsula (23,500 sq ml) standing boldly out into the Arabian Sea, its physical features suggest that it may once have been an island of volcanic origin. Between Saurashtra peninsula and the Gujarat mainland a belt of salt land, with occasional marshes and pools, called the Bhāl-Nalkāṇṭho, shows that at one time a channel joined the Rann with the Gulf of Cambay-through the Nāl lake, and that the whole northern margin, from the Gulf of Kachchha to the Gulf of Combay, was once washed by the sea. The silt of the old eastern branch of the Indus (Sarasvati), of the Lūṇī, the Banās, the Sarasvati of Pāṭaṇ { 130.131-I }, the Rupeṇ, and the Sābarmati has gradually filled the shallow sea-bed into with it fell [BG VII, Kathiawar, Bom, 1884, p. 1-2]. The Nāl lake lying in the Bhal lowlands between Saurashtra and Gujarat covers an area of 49 sq ml. It is probable that the Nāl and lower course of the river Bhogāvo, together represent what at no very distant date was an arm of the sea, which possibly at a still earlier date combined with the Rann of Kachchha to isolate Saurashtra from the mainland [BG, IV, Ahmedabad, 1879, p. 16]. "Hardly any inhabited country", wrote Milvill in 1827, "can be much lower than the isthmus between the Nal and the Rann. During heavy rain it is entirely overflowed, changing the peninsula into an island; and if the rain is very heavy or lasts

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'head,' when applied to streams means the mouth of the river. The four branches are rivers which flow into the stream which constantly encircles Paradise. 'The name of the first is Pishon: this is the one that surrounds all the land of Havilah where there is gold.' The Pishon I would identify with the Indus which would lead us to assume that Havilah here indicates India or in a vague manner the far east." [Langdon, Stephan, *op. cit.*, pp. 10-12].

long, the water of the Rann flows into the Nal, and from the Nal finds its way into the Gulf of Cambay. Stones bored through the center are sometines still found in the Nal, and are believed by people to be ancient anchors. A popular local legend tells how in the days when Krishna was incarnate, the now shallow lake was a part of the great ocean, and how on one occasion a very high tide washed from the shore all the sandpipers' eggs. The bereaved parents called a general assembly of the birds, who making common cause began to bring earth in their beaks to dam out the greedy sea. The haughty eagle (Garuḍa), Krishṇa's steed, not having attended the assembly, was put out of caste, and at his next visit was received with contumely. Forced to do something to retrieve his position, he pursuaded his master to restore the lost eggs, and the birds gave over building their dam. This tradition seems in mythical dress to show, at once the former character of the country, and the gradual shrinking of the sea " [Bom Govt Sel., X, 69; 1827]. " Dr. Hove, so late as 1788, was told that at every high spring boats came from Bhavnagar for salt as far up as Patanvada under Mithapur (on the Little Rann in north Gujarat), and that cotton was exported from the same place to Broach and Surat" (Bom. Govt. Sel., XVI, 121).

101-II. Such physiographic changes as we have noticed in the foregoing (the concomitant and interconnected events of the disappearance of the Saraswati and the drying up of the sea over the Ranns and the Bhal, and the subsequent development of the Indian Desert), which seem to have occurred slightly, if not immediately, before Twelve Years Drought of S'antanu's reign {125-I, 10}, the fourth before that of the Mahabharata heroes {12-13th cent BC, Fn 22}, were followed by the submergence of the southern sea-coast of Saurashtra, together with Dvāraka, the capital of the Vrishṇi-Andhaka tribes of the Yadavas (Yadus) in Ānartta or Ancient Gujarat [*Mhb*, Mausala p., VII, 22: VIII, 11 : *Vishṇu* p. V, 38, 9-11 : *Bhāgavata*, XI, 31, etc.], 36 years after the war [*Mhb*, Mau, 1], which are indeed supported by geographical facts [Hebbert, H. T., 'Geological Action on the South Coast of Kattyawar', 'On Encroachment of the Sea on the Coast of Kattyawar.' TBGS, XVIII, 1968]. A subsequent phase of geographical changes is echoed in the Buddhist and Jain literature. According to the *Divyāvadāna* [Cowell & Neil, p. 576], Roruka was the capital of the Sauvira country [the area lying between the Saraswati and the Sindhu was known as Sauvīra and the trans-Indus territory was called Sindhu-deśa {93-I}, during the reign of Rudrāyaṇa, a contemporary of Bimbisāra of Magadha, c. 582-554 BC, cf. Smith V. A., *OHI*, 1919, p. 70], which was destroyed by a catastrophe. The *Āvaśyaka* chūrṇi, Uttara, II, Ratlam, p. 37, informs us that Vitabhayanagara was the capital of Sindhu-Sauvira, one of the '25½ Ārya' countries of the ancient Jain literature [*Pannavaṇa*, I, 37, Bom. 1918, p. 55; *Bṛihatkalpa*, Bhashya, Sanghadāsagaṇi XVI, IIII], during the lifetime of Mahāvira [*Bhagavatī sūtra*, s'ataka, XIII, 6], c. 527-477 BC. [Smith, *op. cit.* p. 51], when Udāyana was its ruler. After the murder of Udayana by his sistor's son, gods threw a shower of dust which covered the whole city, except a potter's house. These appear to be the two versions of the same tradition. It implies that a catastrophic natural phenomenon had occurred in the Indus valley during the sixth century BC when cities like the capital of Sauvīra were buried under dust-storms, obviously released by an earthquake. There is literary evidence to show that this structural change reacted on the sea-coast of of south Gujarat in the submergence of the Narmada delta into the waters of the Gulf of Cambay [*Bharu-jātaka*], a fact that is supported also by geography [Blanford, W. T., 'On the Geology of the Taptee & Narbada Valleys and

some Adjoining Districts,' *MGSI*, VI, 1869, pp. 341]. The Buddhist literature informs [*Divyāvadana*, p. 576] that Bharukachchha was rehabilitated by Bhiru, who was one of the two chief ministers of king Rudrāyana, whose kingdom in the Indus valley was destroyed by a great earthquake.

102-II. The next recorded earthquake in Kachchha and its Ranns occurred in 893 AD. In 1819 a violent earthquakk destroyed Bhuj, the capital of Kachchha, and the Dinodhar, an extinct volcano, again became active. The most remarkable change was across the Kori river (the mouth of the Purāna or the Saraswati), along about 50 ml of country, the raising of an earthen bank from 10' to 20' high, which is known as Allāhbandh or God's Dam [*GB*. V, Cutch, Palanpur, and Mahi Kantha,' 1880, pp. 16-7]. The next earthquake recorded is a series of shocks in 1844, which made the Allāhabandh broader and in 1864 and 1883 much damaged was done in the eastern part of Kachchha known as Vāgaḍ, which is still the stronghold of the pastoral Abhīras (the Ahirs or Ayars) [Oldham, R. D., *MGSI*, XLVI, pt. 2, 1926]. In 1956 a severe earthquake overtook an area of a thousand miles square at and around Anjār and caused great damage. The basin of the Sarasvati, together with the area covered by the Ranns of Kachchha and the Bhal, lies exclusively on what is known as the Zone of Comparative Intensity in seismology with Kachchha (Kutch) as an epicentral tract.

103-II. Maritime trade by country crafts between Iraq and Saurashtra-Kachchha sector of the West Coast (anc. Aparānta) still survives. The author has still fresh in his mind the accounts of voyages which the elders of his class-mates belonging to the sailor-caste (the Vāghers who ruled Okhāmandal in the extreme west of Surashtra with Dwarka as their capital as late as 1817, and commanded the sea-routes in the Arabian Sea between the island of S'ankhoddhār or Bet Dwarka near Okha Port, and the island at the entrace of the Red Sea which also they named as S'ankhoddhār, i.e., Socotra, as the Portugeese pronounced this name) used to make via Gwader, Muscat, Hormuz, Bahrein and Failaka and do still so. It is not only the *Bāveru-jātaka* that tells us of the maritime trade between ancient Iraq and pre-Buddhista India, but the story of Usha-Aniruddha also informs us that the Yadus or the Yādavas of Surāsh'ra not only were in communications with Iraq but had also the matrimonial relations with the Assyrians during the period of the Mahabharata War [Pandya, A. V., 'Gujarat & Assyria', *JGRS*, 1944; 'Some Ancient Cities of Iraq in Early Indian Literature', *VVRB*, I, 1, 1957]. The Rigveda, VI, 20, 12, mentions that Indra brought the Yadus from across the sea. The termination -u in their name again reminds us of its Akkadian affinities {118-I}.

104-II. In view of the above facts A. V. Pandya has rightly pointed out, in contrast to the opinion of the writers on Rangpur and Lothal, that the inhabitants of these and other chalcolithic settlements of Sausashtra-Kachchha maintained communications by boats through the waters of the Sarasvati and the Indus with northern India and the Gangetic valley, because these two rivers fell into the former sea of the Ranns and the later had a direct outlet into the Gulf of Cambay through a natural channel which formerly occupied the present marshland of Bhāl and of which the gradually shrinking Naḷ-Sarovar is a remnant ['The Haṛappā Culture of Lothal and Gujarat', *VVRB*, I, ii, 1958, pp. 2540, with a map of ancient coast-line of Gujarat amd Sind].

105–II. Two chief geographical factors seem to have played role in making Gujarat the main area of commerce between India and the ancient Western World of which, Iraq, Palestine and Egypt formed an important part. Firstly, the sea-coast of Saurashtra-Kachchha [no permanent ports could flourish on the western coast of Sind on account of the Indus Delta having gradually been advancing into the Arabian Sea and the eastern coast of Sind lay along the sea of the Greater Rann 136,156-I] is the nearest partion of the West Coast of India to that of Iraq. Secondly, as the lofty and unbroken range of the Sahyadris stands as a barrier south of the Tapti river between the West Coast and the Indian hinterland, the contours of the land lying between this mountain and the Indian Desert permited the development of main natural routes to the interior from the coast of Gujarat. Four such main inland arteries are known from the ancient literature, viz. (1) the route of the dry bed of the Sarasvati to Hastinapura; (2) the route via Ānarttapura (mod. Vadnagar), the Chandrāvati Pass near Arbuda or Abu, Pushkar near Ajmer, Virāṭa (Bairath) to Mathurā and Indraprastha on the Yamunā; (3) the route by the way of Dadhipadra (Dohad), the Bāgh Caves, Dhārā (Dhar), Ujjayinī (Ujjain), Vidishā, Eran, Bharhut, Chitrakūṭa to Kaushāmbi on the Yamuna and Pratishthāna (later Prayāga) at the Sangam (confluence) of the Yamuna with the Ganga and thence, after joining there the highway from Pushkalāvati and Central Asia, proceeded via Girivraja to Tāmralipta on the Bay of Bengal; and (4) the route to Mahārāstra via Darbhāvati, Nandipuradvārī (Nandurbar), Nāsikya (Nasik), Nevāsā to the second Pratishthana (Paiṭhaṇ) on the Godāvari.

106–II. Thus there is greater probability, as Kramer has argued [45-I], in favour of Saurashtra-Kachchha-the lower Indus Delta area as having been the Sumerian paradise Dilmun, from where the god Enki had, according to very ancient Sumerian tradition as we have seen, carried the elements of the Urban Revolution including its chief instrument the plough which enabled the production of high agricultural yields sufficient enough to give rise to this great socio-economic event of the human history, to the pre-Flood Sumer during the middle of the 5th millenium BC.[64] The excavations by Fuad Safar at Eridu have exposed the temple (ziggurat) of Enki together with the heaps of the bones of the fishes which were dedicated to Enki at the time of his worship [*Sumer* III, 2, 1947 VI, I, 1950]. The Eridu culture is archaeologically the oldest culture of the southern Iraq or ancient Sumer.

THE HUMANITARIAN AND CIVILIZING VARUNA-ENKINDU-EA, THE FIRST INTERNATIONAL GOD OF THE MANKIND, AND DEVELOPMENT OF MONOTHIESM AROUND HIM

107–II. Now let us see if we can trace the god Enki in the ancient Indian literature and tradition, because he must have existed in India in some form if Dilmun really were in India. It may be mentioned in this connection that all his chief Sumero-Babylonian epithets and offices, viz., Naqbu (the god of the sea), Shar-apsi (the lord of the sea), Nin-bubu (the god of the sailors), Lagal-ila (the lord of the rivers), Anuna-ana-ki (the lord of the heaven and earth), Engur (the lord of the underworld), besides those we have already noticed [92, 94-II], are in India ascribed to the god Varuna [*Rigveda*, VII, 49, 3;

64 – The plough is first encountered in the archaeological records of the Middle East in the Eridu Culture (at Abu Shahrain) or the culture of the seat of Enki in Iraq, dated c. 4500 BC.

VII, 86–88; VII, 64, 2; VII, 87; VII, 6, etc], who was gradually superceded by Indra in the Vedic religion. Varuna is mentioned in the Boghazkoi archives of 1360 BC together with other Vedic deities {107–I} worshipped by the Mitanni aristocracy {109-II-I} of Kurdistan and northern Iraq. It is very likely in these circumstances that Varuna whom the ancestors of the Mitannians may have carried with them from India, absorbed some of the attributes of the Assyrian deity Ea, in the course of their residence in the Western Asia, and it is probably why Varuna has an epithet of Asura in the Rigveda, I, 35, 7; II, 27, 10; VII, 65, 2; VIII, 42, I, etc. [Dandekar, R. N., 'Asura Varuna,' *ABori*, XXI, 3-4, 1940]. Some information about the pre-Vedic Varuna of India can be derived from the Puranas, which state that the gods appointed Varuna as the lord of the water [*Mhb*, Shalya-p. 48, 11]. He was also the guardian deity of the cardinal point west, the sea and was the king of the Nagas [*Mhb*, Sabha-p. 11, 8–13; Udyoga-p. 98], his spouse was Vāruni or Surā, i. e., the wine [*Mhb*, Sabha–p. 9, 6–7], his capital named Susā was situated at the end of the Mānasottara mountain range which ran west from the Meru mountain-knot lying to the north of Bhāratavarsha or India [*Matsya*–p. 124]. " Varuna.... a god of the seas and rivers, " writes J. Dowson, " who rides upon the Makara {a huge sea animal, which has been taken to be the crocodile, the shark, the dolphin, etc, CDHM, p. 195}. This character he still retains {in the Indian iconography and his stone images are set up as a rule in the Indian traditional temple architecture facing the west as the *dikpāl* or the guardian-deity of that cardinal point}. His sign is a fish. He is regent of the west quarter and one of the *nakshatras* or lunar mansions" [*A Classical Dictionary of Hindu Mythology and Religion, Geography, History and Literature*, Lon, 1961, pp. 336–7]. He presented the first King Prithu Vainya {17, 314–I} with an umbrella and carried a noose [*Bhāgavata*-p., III, 17, 28]. His son was Agastya. He left Gokarna on the West Coast {near Karwar in Mysore State being still a major place of pilgrimage} in favour of Parasurāma [*Brahmānda*– p. III, 8, 7, etc.].

108–II. Since the Puranic Varuna is regarded as the Lord of the Western (Arabian) Sea having his centre at Susa on the border of Iraq and Iran, he seems to have been rather a common deity of the Sumero-Babylonians and the pre-Vedic Indians, although he had different names in the two lands. The pre-Puranic or the indigenous Varuna seems to have been an Austric [Przyluski, J., 'Varuna, God of the Sea and the Sky', *JRAS*, July la31, pp. 613–22] or the Indo-Pacific god of the rivers and the sky, just as Nārāyana was of the ocean. Przyluski traces the origin of the Varuna or rather Baruna to an Austro-Asiatic root *bar* which stands for the sea and the sea-coast and also ascribes the etymology of the Malayan term *baroh*, the Sumerian *bar*, and the Semitic *bahr*, all denoting the sea, to the same root. He also traces the origin of the Prakrit forms of the names of the two oldest ports of Gujarat namely, Bar–vai or Dwarka {bar–vai ⟶ bārā–vati ⟶ dvārāvati} and Baru–kachchha {*baru*–kachchha > *bharu*–kachchha > bharu-achcha > bhar–ucha} or Broach to the same source. Thus the Austric *baru-na* was the good of the sea. This etymology brings Varuna or the Sumerian Enki of Dilmun in context with the coastal land of Gujarat (Saurashtra and Kachchha are its two components) identified with Dilmun by Kramer {45–I, Fn14}.

THE INDIAN MIDDLE STONE AGE

109–II. These developments in view of the date of the Eridu Culture {4500 BC, 74–I} of the antediluvian Sumer, may well have taken place during the earlier half of the fifth millenium BC or say by 5000 BC, if the events discussed had an element of histori-

city. Gujarat has though yielded pre-Indus aceramic microlithic remains [Rao, S. R., 'Excavations at Rangpur & other explorations in Gujarat;' AI XVIII-IXX, 1962-63, pp. 20,27, etc.], but their antiquity does not touch the 5th millenium { 76, 80-I }. The so-called Middle Stone Age or Series II tools { 4, 79-I }, which find in our present state of knowledge [I-Arch 1955-6, pp. 4-5, Ahmadnagar Dist., Maharashtra, and nothern Mysore or former Bombay-Karnataka., 59-7, pp. 5-6, Chambal p. 11 Dhulia Dist, Maharashtra, Mandsaur Dist, MP; 57-8, pp. 20, Bombay, p. 24, Dhulia, p. 25-6, Panna, MP, p. 41, Dhenkanal, Mayurbhanj and Sundagarh Dist, Orissa; 58-5 pp. 18 Chanda, Maharashtra, Surendranagar, Gujarat, p. 22, Dhulia, p. 26, Vidisha, Damoh and Sagar Dist, MP, p. 27 Jabalpur Dist, MP, p. 36 Keonjhar and Mayurbhanj Dists, Orissa, p. 42, Pali and Jalor Dist, Rajasthan, 59-60, pp. 11 Kurnool Dist, Andhra, p. 21, Vidisha & Guna Dist, MP, p. 22 Hoshangabad Dist., MP, p. 29, 31, Ahmadnagar and Chanda Dists, Maharashtra, p. 40, Jodhpur Dist, Rajasthan, p. 48, Mirzapur Dist, UP, p. 48-50, Bankura & Purulia Dist, W Bengal; 60-1, P. 5 Monghyr, & Santal Pargana Dist, Bihar, p. 24 Chanda Dist, Maharashtra, p. 30 Pali Dist, Rajasthan, p. 35, Hamirpur Dist, UP; 61-62, Mandla Dist, MP, p. 38 Chittorgarh Dist, Rajasthan; 62-3, p. 1, Chittoor Dist, Andhra Pradesh, p. 5, Monghyr Dist, Bihar, p. 15, Dhulia & Jalgaon Dist, Maharashtra, p. 31-2, Allahabad Dist, UP, etc.][65] their distribution exclusively confined to the Peninsular India from the Kangabati valley in W. Bengal in the east to the Bhadar in the west, and the Luni in the north to the Bahuda valley in the south, appears to be too remote chronologically in view of the fact that this industry occurs in its earlier aspects at a number of sites in geological contexts of the Upper Pleistocene { 4-I }. The Indo-Pacific Austrics used for their equipment, as they still do, largely the perishable organic materials obtained from the forest or the sea. As for the relics of the early Austric culture in Western India the shell-mounds may first be sought for on the present coast or on the raised beaches which do exist in Saurashtra [Theobald, W., 'Note on the Value of Evidence afforded by Raised Oyster Banks on the Coast of India, in estimating the amount of Elevation indicated thereby.' *RGSI*, V, 4, 1872, pp. 111-2 : *MGI*, 1879, p. 409-9] and southern Gujarat.

110-II. "The Indian Middle Palaeolithic" { Middle Stone Age or Series II }, writes W. A. Fairservice, "is characterized by relatively small tools made generally from flakes. Tool types include scrapers, borers, and points. Interestingly, though the Levalloisian technique occurs, the industry cannot be said to equate to Middle Palaeolithic industries elsewhere. It appears to be characteristically an Indian manifestation in which old and new traditions mix. One theory would derive the industry from the earlier but local handaxe-cleaver tradition { belonging characteristically to the Indo-Atlantic community-author }. Two significant features mark the Indian 'Middle Palaeolithic': it is Late Pleistocene in time, and it is generally absent in North India. Its relationships to the Late Soan are also

65 – To these may be added the following recently discovered Middle Stone Age sites. The names of discoverers are given in parentheses:–

(1) Fort Hill at Garudeshwar on the Narmada, Broach Dist., Gujarat (A. V. Pandya).

(2) Temple Hill at Nemāwar on the Narmada, Dhar Dist, M. P. (A. V. Pandya).

(3) Shivrajgadh on the Bhadar, Saurashtra, Gujarat (A. V. Pandya).

(4) Hill at Unai, Bulsar Dist., Gujarat (Archaeological Survey, Western Circle).

completely uncertain.[66] At present, evidence for an Upper Palaeolithic industry comparable to that of Western Asia is lacking. However, there is a true Mesolithic designated by the appearance of microliths { microblades }. There is a considerable problem as to the date of the Indian Mesolithic....The three major sites of the Mesolithic — Birbhanpur (W. Bengal), Tinnevelly { the Teri-sites } in the extreme south, and Länghnaj (Gujarat) — are geographically remote from one another but do share in common the fact of their existence during a period of increasing dryness. Birbhanpur lacks geometrics;[67] Tinnevelly has geometrics associated with a unique industry of pressure-flaked bifacial points found also in Ceylon; Langhnaj has three major periods, all of which have microliths but each of which is distinctive" [*American Anthropologiest*, LXVI, 5, October 1964, pp. 122].

III-II. "Indian Middle Stone Age," observes Bridget Allchin, "is characterized first and foremost by the manufacture of flake tools, a tradition which may very well have developed locally out of the handaxe and chopping-tool industries of the Early Stone Age. Two principal methods of obtaining flakes from prepared cores can be distinguished. The first method is that of striking flakes from carefully prepared disc-shaped or oval cores in the manner common to the Levallois-Mousterian industries....The resulting flakes are round or oval and....generally show fairly pronounced bulbs of percussion. The second method was to strike triangular, square, or oblong flakes, some of which qualify for the term blade-flakes. These cores, which are often river pebbles, sometimes look like the refined and diminishing descendants of the chopping tools of the Early Stone Age....Both the preparation of core and the method of removing the flake differ fundamentally from that seen in the blade industries of Europe, wertern Asia, and parts of East Africa....In the later part of the period especially the secondary work is often fine

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66 – A. P. Khatri thinks that the authors of the Middle Stone Age industries were a different independent stock culturally and ethnically from the authors of the handaxe-cleaver complex of the advanced Acheulian stage ['Origin & Development of Series II Culture of India', *Proc. Prehistoric Society*, XXVIII, 1962, pp. 191–208], a view which K. V. Soundara Rajan refutes [*The Indian Middle Stone Age Culture — A Note on its Personality & Nexus*, 1964 manu.].

67 – "It is known", states B. B. Lal, "that in the first and second millenia BC microliths occur in a chalcolithic context, for example, at Brahmagiri, Maski, Maheshwar, Nasik, etc., not to speak of the Harappan sites, where they occur, in the form of ribbon-flakes, even a millenium earlier. At all such places, they are associated with metal and pottery; sometimes they include typical geometric shapes like the trapeze and triangle; and the 'crested-ridge' technique was employed in their preparation. As all these features are altogether absent in the Birbhanpur microlithic industry; it seems highly probable that this industry is anterior to that of occuring in the chalcolithic context......one may recall the evidence from Rangpur in Gujarat, where microliths occur below the Harappan levels: they include typical geometric forms and are not associated with pottery....may therefore be placed at least in the third millenium BC. Now, if it is presumed that in microlithic industries the typical geometric element made its appearance at a late stage, it would follow that essentially non-geometric and pre-pottry microlithic industry of Birbhanpur may not have been later than the fourth millenium BC" [*AI*, XIV, 1958, pp. 35–6].

and controlled....but there is a little evidence of pressure flaking like that seen in the Stillbay or the Solutrean industries....Hollow scrapers may be made on all types of flakes, and they are also found in a form which is probably characteristic of the Indian Middle Stone Age {beaked tool}, as it was of the Early Stone Age....In the later Middle Stone Age industries these tools are further reduced in size, as are most other forms, and they seem to trend more and towards awls....Burins..do not appear to tend towards any particular type....Burins an important part of the equipment of Stone Age man in cold climates. They were used in making the bone needles and other tools, which were necessary for sewing carefully tailored skin clothing and boots without which life in many of these regions would have been impossible....Clearly in warm climates the need was also felt for grooving, piercing and engraving tools....Following from this, one would expect that in an industry which lacked burins some other tool would be found to perform these functions, and in India the most likely candidates seem to be the beaked tools....Points like burins, appear rarely....This seems to indicate that some material other than stone was employed for missile points....In South-East Asia even today bamboo and other hard woods are widely used for a variety of purposes, ranging from arrow-heads and spear-heads among hunting peoples to the bamboo knives in daily use by peasants and villagers. Similar practices may well have prevailed in Middle Stone Age India....By contrast the Clactonian Industry in Europe {of the Indo-Atlantic Community} and the Chopper-Chopping-Tool industries of many parts of South-East Asia {of the Indo-Pacific community} lack any such highly developed forms.....It is clear that we have in this negative aspect of the Indian Middle Stone Age a reflection of Eastern {Indo-Pacific} traditions and also a possible survival from the Chopper-Chopping tool industries of the Early Stone Age .. In the early phases of the Middle Stone Age in Peninsular India occasional handaxes are found among the flake tools, but these drop out as time goes on....Cartain of the Late Soan assemblages from near Rawalpindi, described by de Terra and Paterson (1939), include extremely fine small handaxes. On the other hand the majority of Late Soan tools fall well within the range of the Indian Middle Stone Age. The relationship of these industries to those of the Indian Middle Stone Age of Peninsular India, on the one hand, and to the Mousterian of Central and western Asia {which have yielded the skeletal remains of Neanderthal Man, Coon, C. S., *The Origin of Races*, Lon. 1963, pp. 561-7}, on the other, deserves further investigation....None of the caves {having rock-paintings and containing microliths} have yielded any specifically Middle Stone Age tools .. Thus the relationship of the Middle and Late Stone (microlithic) Age traditions in Central India remains somewhat obscure.... In western India, near Bombay....and again in the extreme south, Middle and late Stone {microlithic} tools have been found at the same or closely related sites in a manner which suggests an unbroken tradition....At the Tinnevelly sites the fusion of Middle and Late Stone{microlithic) Age techniques appears to go deeper than in other cases, with the exception of Ceylon. This late survival of Middle Stone Age techniques in modified form has parallels, notably in the Nile valley, in southern Africa, and in Kenya..The same situation has been noted in parts of western Asia "[Allchin, Bridget, 'The Indian Stone Age Sequence,' JRAnth I, 93, 11, 1963, pp. 216-20].

112-II. Now the issue that arises is where to draw a line in the medley of various phases of the Indian Middle Stone Age industry to mark the beginning of India's protohistory. The Indian protohistry separates itself from prehistory in the respect that the remains of the

former occur either on the surface or found embedded in the topmost geological formations belonging to the post-Würm Neothermal coinciding with the rise of increasing dependence on productive economy in ecologically favourable regions of the world — say in the Southeast and the Western Asia in the present state of our Knowledge; and those of the latter in the deposits of the Pleistocene { 4-I } when hunting of the big game, together with gathering, with the aid of the heavy stone implements of the Lower Palaeolithic type[68] was the mainstay and the economic life was necessarily mobile, because, the game exhausts in the vicinity of hunters or migrates elsewhere in order to save itself from the human predation. It is why the ralics of the prolonged settlements like those of the hamlets and villages of such food-producers as the Indo-Pacific horticulturist-fishermen or the permanent ones of the Indo-Atlantic agriculturist-herders are not found in the Lower Palaeolithic contexts.

113-II. The present-day writings on the pre- and protohistory of India deal largely with the process of manufacturing the tool equipment and derive inferences on culture therefrom withont a proper discussion on economy to which both the tool-technique and cultural equipment, as well as social organisation are subsidary readjustments. It is on account of such pitfalls that the cause of the Indian protohistoriography has so far been sufferring to an appreciable extent.

114-II. The significance of the microliths with serrated or saw-like working-edges, known generally in European and Middle Eastern archeology as the sickle-blades, remains yot to be fully appreciated in the Indian archaeology. "Mesolithic tools and weapons" writes Kenneth P. Oakely, "were mainly of composite types, in which the microliths were the piercing and cutting elements. The bow-and-arrow was the chief hunting weapon. In forest environments, the Mesolithic hunters devised hafted stone axes for working wood. In some localities they made canoes, in the sub-arctic regions they used skis and sledges; and they domisticated the dog. In spite of all these ingenious adaptations and inventions, life remained at the level of bare subsistence until various groups of people in Asia began to adopt the revolutionary practice of cultivating plants.... Bone and antler sickles, with flint teeth.... have been found on a Mesolithic site in Palestine dating from about 7000 BC. Within the next two thousand years cultivation of grasses.... became well established in Middle East, when these practices spread in the Neolithic phases of culture, reaching Britain about 2500 BC." [*Man the Tool-Maker*, Lon, 1958, pp. 84-7]. It is significant that the serrated microliths occur practically at all microlithic sites and there can be little doubt that they are sickle-flints on the Middle Eastern analogy. They differ from the saw-blades. "The reaping knife or sickle : among the tools on which traces of use also occur as striations parallel to the blade-edge and on both faces we may place the earliest sickles, surviving in the form of flint reaping knives, which occur as slightly trimmed prismatic bladelets. They may be distinguished from saws by the fact that the worn part often has

68 – The handaxe-cleaver technological tradition of manufacturing the Lower Palaeolithic stone tools was current among the peoples of the Indo-Atlantic community and the chopper-chopping tool tradition was followed by those belonging to the Indo-Pacific community. The Soan (Suāñ and not Sohan) palaeolithic industry of the Siwāliks in India from whose latest form the Indian Middle Stone Age industry is understood to have developed by some scholars, belonged to the latter lithic tradition of the Indo-Pacific community.

a different shape. The wear traces do not form an even pattern on the side, but instead, are shaped like a triangle, one side of which is made by the cutting edge, while the hafted end, being embedded in the handle, remained unaffected " [Semenov, S. A., *Prehistoric Technology*, English tr., Lon, 1064, p. 19]. The presence of the sickle involves harvesting. The harvesting involves food-production through cultivation of cereals, which in its turn involves a village life. A prolonged or permanent village settlement cannot normally exist off the sea-coast unless it is largely aided by the productive economy of seed-cultivation. The sickle-flints occur at Birbhanpur [Lal, B. B., *AI*, XIV, 1958, plate VII, No. 8,15; pl. IX, 29; pl VIII, 16, etc.] of c. 4000 BC. At still earlier teri-sites of Tirunelveli Dist, Madras State, on the southern extremity of India, the sickle-flints do occur [Zeunner, F. E., & Allchin, B., 'The Microlithic Sites of Tinnevelly District, Madras State,' AI XII, 1956, Fig. 2, 21, p. 15, etc.], but the author has recently found at Sayapuram (Sawyerpuran) further evidence in the form of clearly serrated blades in association of microliths.

115-II. A settlement site attesting a prolonged habitation, such as are the teris-sites, cannot normally flourish purely on hunting and fishing economy. " People who intensively exploit large lakes and ocean fishing grounds often secure part of their subsistence from agriculture " [Honigmann, J. J., *The World of Man*, NY, 1959, p. 308]. However, the variety and the quantity of the lithic equipment found at these sites, do not suggest a predominately fishing life. The author therefore maintains that the teris-people were mainly horticulturists raising and harvestingp probably millet crops and also deriving an appreciable part of their subsistence from fishing and hunting. Their presence in the vicinity of the sea does not exclusively mean that they settled there for fishing. The main target of the Indo-Atlantic horticulturist communities equipped with the lithic tools and weapons, such as found among the teris-people, was mostly a light and loose loamy soil for the ease of digging into them with dibble or hoe. The inhabitants of the western Asia before the Eridu culture when the plough, the potter's wheel and the vehicular wheel were introduced very probably from Dilmun the inhabitants who belonged to the earlier cultures ranging in order of antiquity from the early chalcolithic Hassuna-Samarra 4000-5000 BC {76-I} through the Jarmo Ceramic Neolithic, 5000-5500 BC {81-I}, Jarmo Aceramic Neolithic, BC {81-I} even back to the Mesolithic Karim Shahir-Jericho Proto-Neolithic-Enyan-Helwan-Natufian complex, {80-I}, 7000-8000 BC [" Gradual move from caves to open-air sites, either semi-permanent camps or first villages, e. g., Enyan, Proto-Neolithic Jericho. First huts and houses, domestication of dog and goat and **reaping** and storing of grain. Hunting, fishing, etc., continue strongly, Mellaart, J., "Roots in the Soil", DC, 1961, p. 42] were all horticulturists and partial horticulturists who had a preference for light soil along the dunes. We have already spoken of the Afrasian Desiccation and the fact that its gradual development in the Middle East rendered the conditions of the cultivation more and more unfavourable on account of increasing drought with the result that the Mesolithic communities which appear to have been initiated to the productive economy by learning horticulture from the Archaic Austric horticulturist-fishers {106, 169-74-I}, were after some time compelled to leave their habitats and to spread gradually in the wake of the drought in various directions going as far east as Mongolia where we find the relics of the Dune-Dwellers of the Gobi [Andrews, R. C. *Meet Your Ancestors*, 1961, pp. 209-15] and some of them obviously entered India. In India in course of time they had spread as far east as the fringe of the Gangetic Delta, where we encounter them in their relics at Birbhanpur, and in the south right down to the tip of the Peninsula at the teris and even across the Palk Strait in the great island of Sri Lanka (Ceylon), having passed through the dune areas of Sistan, Baluchistan and Gujarat.

[illegible] A technological crossing apparent between the lithic equipment of the Teris-people, a blade industry genetically connected with the Middle East.[69] and the late Middle Stone Age lithic assemblage, a flake industry { 101-I }, may suggest, if we do not think it resonable to trace locally the development of the former industry from the latter, that the former people were probably among the earliest known Indo-Atlantic horticulturists to have entered India, obviously from the west, who had reached the tip of the Indian peninsula and then to have entered Ceylon earlier than the fifth millenium BC. They, in the Tāmraparni Valley, seem to have come under the influence of the authors of a late Middle Stone Age industry, whose presence has archaeologically been tracod recently as far south as the Chittoor District. Elsewhere we have not so far found an evidence of such a relationship between the two communities. It is only in the Tamraparni Valley that we first encounter it.

[illegible] The Culture of Birbhanpur displays a technological development somewhat later than that of the Teris-people but, earlier than that of the fossil dunes in Gujarat as well as the one connected with the oldest series of the rock-paintings found so widespread in the middle India. This shows that the immigration of desiccation-driven Middle Eastern horticulturists who pursued a search of soft soils for their semi-sedentary economy and habitation, into India was in the form of intermittent waves, which in this subcontinent appears to have taken two directions, an eastward movement across the middle India that terminated on the western margin of the Gangetic Delta, and a southward migration by the way of the fossil dunes of Gujarat, and then through the Tamraparni Valley to the island of Sri Lanka.

116-II. A peculiar feature of the productive economy of the Middle East has been the rearing of the milk-giving animals { 309-I } together with seed cultivation both under horticulture (burn-and-slash) and agriculture (plough cultivation). As no bones of domestic or other animals have so far been found either at the Teris-sites or at Birbhanpur, it does not mean that their microlithic folks did not practice dairying and slaughtering. Detailed and extensive studies in connection with the cultures of these sites remain yet to be made. The finds of shell-mounds only can show if they were intensive fishers or not. Perhaps they were not. It appears that if they had goat and sheep they had probably no cattle with them which were domesticated in the Middle East and the Inner Asia (Beersheba-Sialk III-Shah Tepe III- Anau II archaeological horizon) during the 5th millenium BC { 310-I }.

117-II. Now the issue that presents itself is where to draw a line in the medley of various phases of the Indian Middle Stone as discernible from its lithic technology marking the begining of the protohistory of India's past. The geological Surface Period and economically the beginnings of the productive economy through its most primitive form the "river-bank horticulture" seem to have sychronized. A large number of the late

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69 - "The earliest blades that we know of were made in Palestine, Lebanon, and Syria during the Würm I. They are found at a number of sites together with flake tools. Only gradually did the blades come to outnumber the flakes. By the Würm I-II Interstadial, a true blade culture had arisen. Also a recent survey of southwestern Iran has discovered a similar evolution from flakes to blades" [Coon, C. S., *The History of Man*, Lon, 1962, p. 79].

Middle Stone Age sites, for example that at Nemāwar on the Narmada, suggest by virtue of a high concentration of antiquities at a single spot and other factors, a prolonged habitation, which can hardly be possible without some base of productive economy such as the river-bank horticulture as a part of their predatory economy of hunting and fishing. In view of this factor and that the remains of the late Middle Stone Age, unlike its early stage { 4-I }, occur on the surface, the author is of the opinion that Indian protohistory may well be taken to begin with the late Middle Stone Age cultures. From this period downwards to our own time the Indian tradition has persisted, because, as we have seen earlier { 110,111-II }, there is continuity between the Middle Stone Age and the subsequent Microlith-bearing neolithic and Chalcolithic cultures, to be noticed, for instance, at such sites as Navdatoli, Nemāwar, Rangpur, Rozdi, etc.

118-II. Turning to the other end, we find that the chain of the recorded history of the Indian subcontinent in its extant form, which is indeed a British legacy, as worked out by the historians of the past generation [Rapson, E. J., *The Cambridge History of India*, Lon., 1921, p. 152 ; Smith, V. A., *The Early History of India*, Oxford, 1924, p. 32] goes practically unbroken into antiquity to the 7th cent. BC, when Sisunāga dynasty rose to power in Magadha (Bihar south of the Ganga) by 642 BC. At this time Assur-bani-pal, (668-31 BC), the greatest of the Assyrian monarchs, was ruling in western Asia, from his capital Ninua (Nineveh) which was sacred to the Mother-goddes Nina. He inherited and maintained a great empire that included Egypt from his father Easarhaddon (680-69 BC). His elder brother Shamash-shum-ukin, was given the throne of Babylon when the inherited kingdom was divided. He was virtually the master of the entire Middle East. He was ruthless and often yoked the defeated princes to his chariot in the course of his victory processions through the streets of his capital. He was also the richest man of the world of his times. Above all, he was indeed a great lover of literature and arts and in his inscriptions refers frequently to the education which he had received. " I, Assur-bani-pal, learned the wisdom of god Nabu { Assyrian god of education }, the entire art of writing on clay tablets....I read the beautiful clay tablets from Sumer and the obscure Akkadian writing which is hard to master. I had my joy in the reading of inscriptions on stone coming down from the time of the Flood " [Finegan J., *Light from the Ancient Past*, Lon, 1959, pp. 216-7]. He had his palace adorned with very beautiful reliefs which have a firm place in the world's history of art. It is the find of his great library of thousands of cuneiform tablets from which a great deal of the Babylonian and Assyrian literature has been recovered and key to the reading of the Akkadian (Babylonjan) and Sumerian writings was found out. Both Assur-bani-pal and his capital Nineveh were not unknown to the Indians as A. V. Pandya has shown [' Some Ancient Cities of Iraq in Early Indian Literature; VVRB, I, i, 1957, pp. 39-57]. A little later H. C. Raychoudhuri carried further into antiquity the chain of the Indian history as propounded by his predecessors Smith and Rapson, by a few centuries back to the Puranic King Parikshita, the successor of Yudhishthira of the Mahabharata War { 125-I, 6* }, on the basis of this ruler's references occurring in historiographically the more reliable Vedic literature [*Atharva-veda*, XX, 127, 7-10 : *Aitareya*-ler, VI, 32, 10 : *Kausitaki*-br, XXX, 5 : etc.], who ruled at Hastinapura [Raychoudhuri, H. C., *Political History of India*, Calcutta University, 1923, p. 52]. " The book is in fact, " comments A. L. Basham on Raychoudhuri's work, " a work of research, not only gathering together the data of early scholars, but making original contributions in almost every chapter.

Raychoudhuri's brilliant attempt at making sense of the very tenous data of the pre-Buddhist period earned unqualified praise of de la Valle'e Poussin, and his chronology of this period is, in my opinion, the only one which has any likelihood of approximating the truth'" ['Modern Historians of Ancient India,' *HIP & C*, 1961, p. 248].

119-II. Thus the protohistory of India spans, in the opinion of the author, over a vast period stretching from the cultures of the late Middle Stone Age down to a little later than the end of the Mahabharata War {122-II}. This casually reminds us of the ancient Indian conception of Indian, history. "Indian history of the past, according to Indian historians of the past", writes K. P. Jayaswal, "stops being ancient at the Mahabharata war of c. 1400 BC. From Parikshita to Mahā-Nanda (c. 400 BC) was their Classical Period, and from Mahā-Nanda onwards their Modern Period" [Pres. Add., *Proc. Seventh All-India Oriental Conferencs*, Baroda, 1935, pp. lxviii, lxxix-lxxx]. When we take into consideration various factors which have led the scholars of the Middle Eastern antiquities to include the Sumero-Babylonian ruling dynasties in the history of Western Asia, we see no logical reason, why provisionally the same treatment should not be extended to the Puranic king-lists of early India, more particularly from the view-point that a primary correlation between the Indian protohistoric archaeology and the Puranic historical tradition has now been admissible in the case of the remains of Māhishmati at Maheshwar on {65,77-II} the Narmada [Pandya, A. V., 'Prehistoric Cultures discovered on the Narmada', *Proc. Ind. Hist. Cong.*, 1947, Bombay, pp. 179-94, etc.]. Another fact of this correlation shows that the Peninsular Chalcolithic Civilization, c. 2300-1000 BC {83,87-I}, belonged to a pre-Vedic Indo-Aryan wave whose crude account we find in the Puranas and whose Agamic religion {121-I} constituted a synthesis between the religion of the Agricultural Horizon professed by such peoples of the Indo-Atlantic community as the Sumerians; the Semitic Babylonians, the Assyrians, and the Israelites; and the Indo-Europeans, on one hand; and an earlier religion of the Animistic Horizon practised by various groups of the Indo-Pacific community. In the Indus Civilization, which also should belong to a wave of the pre-Vedic Indo-Aryans different from that of the Peninsular Chalcolithic, the presence of divine figures of the buffalo, the tiger, the rhinoceros, etc. which are native to the humid Indo-Pacific realm, is also very probably due to this synthesis, of which the Sarasvati basin had been the main scene. Out of all the attempts at the reading of the Indus pictographic seals, the one offered by C. F. Gadd {16-II} seems to be the most logical and further study of this writing may well be undertaken on sound lines, because this decipherment alone would lead us to definite conclusions.

120-II. INDIAN TRIBAL LINGUISTIC GROUPS AND THEIR ECONOMIES

		1 ANDAMANESE SPEAKING TRIBES	2 AUSTRIC SPEAKING TRIBES	3 DRAVIDIAN SPEAKING TRIBES	4 TIBETO-BURMAN SPEAKING TRIBES	5 INDO-ARYAN SPEAKING TRIBES
PRODUCTIVE ECONOMY	D AGRICULTURE		Khasi (A), Santal (B), Munda (Bh), Ho, Kol (Bh), Bhumij, Korku (Mp)	Maler (B)	Methei or Manipuri, Bhotia (Bht), Lepcha (Skt), Newar (Np), Khasa (Np), Magar (Np), Gurung (Np), Tharu (Np), Bhot (Ld)	Practically all agricultural tribes have coalesced into castes in Hinduism, Islam, Christianity, etc.
PREDATORY ECONOMY	C PASTORALISM			Toda (M)	Champa (Ld)	Gujars (Hp, Ks, Pw, Hazara), and many others.
PEDATORY-CUM-PRODUCTIVE ECONOMY	B HORTICULTURE		Savara (O), Kharwar (Mp), Asur (Bh), Baiga (Mp), Maria (Mp) Pauri Bhuiyan	Gond (Mp), Khond (O)	Naga tribes (A), Garo (A), Lakher (A), Abhor (A), Dafla (A), Miri (A), Aka (A), Mikir (A).	Bhil (Mp, Gj, Rj, Mh), Bhilala (Mp), Dom (Np, Up Himalaya, Ks).
PREDATORY ECONOMY	A HUNTING-GATHERING	Higher hunters (bow & dog)	Nicobari, Birhur (Bh), Kharia (Bh), Juang (Bh), Korwa (Mp)	Paliyan (K), Malapentaram (K), Chenchu (An), Kanikkar (K), Kadar (K)	Kuki, Konyak Naga (A)	
		Lower hunters (bow but no dog) Andaman Islanders				

121-II. The table of Protohistoric India, conveying a rough idea about the chronology of ancient Iraq and India :—

	THE CULTURES & DYNASTIES OF IRAQ	THE DYASTIES OF PROTOHISTORIC INDIA	INDIAN ARCHAEOLOGICAL HORIZONS
c. 45,000 BC	Shanidar D Middle Palaeolithic together with Neandertha-loid Man.		Early Middle Stone Age (geological context).
		(LOWER LIMIT OF THE INDIAN PROTOHISTORY)	
c. 25,000 BP	Shanidar C Upper Palaeolithic, Baradost, Zarzi, Palegawra.		
c. 10,000 BC	Shanidar B-Karim Shahir-M { Mesolithic }.		Late Middle Stone Age-Surface Cultures.
c. 7,000 BC	Jarmo-Hassuna (Neolithic).		
c. 5,000 BC	Matarrah, Hassuna-Samarra (Early Chalcolithic).		
c. 4,500 BC	Eridu, the pre-Flood city was founded in S. Iraq (The plough introduced, navigation, etc.).	Enki, the Sumerian god of the elements of civilization carries them from Dilmun (Western India) to Eridu port in Iraq (Enki and Puranic Varuna are developments of an Austric god of the water and the ocean).	Birbhanpur & Teri-sites, Djetun I, Sialk-I. Qili Gulmuhammad-I { 77-I, Fn. 15, 77-I, 81-I }.
c. 4,200 BC	Halaf Period-Haji Muhammad (Chalc.).		
c. 4,000 BC	Ubaid Culture (Chalc.).		Rana-Ghundai I (Gulmuhammad II) in which domestic horse present, Sialk III.
c. 3,500 BC	Uruk Culture (Seed-plough, dawn of civilization, Chalc.).		
c. 3,200 BC	Early Protoliterate (Uruk IV).		Gulmuhammad III, Togau Ware.
c. 3,000 BC	Late Protoliterate (Jamdatnasr). Pre-Flood dynasties of Eridu, Bad-urudu-nagar, Larak, Sippar and S'urippak. The Flood came at the end of Ubar-du-du's reign. His son was Utanipishtim.	Pre-Flood rulers. Prithu Vamya { 314-I }. The Flood in Iraq. Manu Vaivasvat.	Zhob-Amri-Kot Diji-Kalibaggan-I complex (Pre-Indus). Quetta-Culture.
Historic Period of the Post-Flood dynasties.			Beginning of Indus Civilization.
	Early Dynastic Period of the Sumerians.		
c. 2750-2600 BC	First Dynasties of Kish, Uruk and Ur. Gilgamish of the Flood legend was 5th ruler of Uruk. 'Royal Cemetery' at Ur.		
c. 2600-2500 BC	Second Dyn. of Kish.		
c. 2500-2370 BC	3rd & 4th Dyn. of Kish, 2nd of Uruk, 2nd of Ur.		
	Akkadian Dynasty		
c. 2371-2316 BC	Sharru-Kin (Sargon of Agade).		Climax of Indus Civilization : Peninsular Chalcolithic Civilization (Puranic) present.
c. 2306-2296 BC	Manishtusu.	Ikshvaku, c. 2300 BC { 37-II }	
c. 2291-2250 BC	Narām-Sin.	Pururavas, c. 2250 BC	Utnur Neolithic.
	Fall of Akkad : Gutian domination.	Yayati, c. 2210 BC	
	Dynasty of Gutium	Kuvālaśva, c. 2190 BC	
2120-2100 BC	Gudea of Lagash.	Mandhatr or Mandhata, c. 2100 BC { 125-I, 97 }	
	Isin Dynasty		Bed of the Sarasvati disturbed : savannah conditions set in. The shift of the main focus of the pre-Vedic Aryan culture to the Gangetic valley. The Sarasvati basin evacuated.
2017-1985 BC	Ishbi-Irra	Karttavirya or Sahasrarjuna, c. 2010 BC	
1894-1874 BC	Bur-Sin.	Sagara, c. 1900 BC	
1860-1837 BC	Enlil-bani		
	Babylon Dynasty	{Bharata, c. 1170 BC {Bhagiratha, c. 1860 { 304-I }	
1792-1750 BC	Hammurabi.	Sudasa, c. 1780 { 125-I, 47 }	Edith Shahr Complex A, ziggurats.
	Kassite (Aryan) Dynasty	Raghu, c. 1690	End of Indus Civilization : Peninsular Civilization persisted to c. 1000 BC.
1690-1675 BC	Abirattash ('abhiratha')		
1675-1650 BC	Dashigurumash	Rama, c. 1660 { 125-I, 35 }	
1375-1347 BC	Purnaburiash-II in Babylonia (Decline of Aryan power in the Middle East begins) and Assur-Uballit in Assyria, Mathiwāza ('victorious through prayer', Aryan) in Mitanni, Suttarna of the Hurris : Aryan power in Middle East weakening before the Assura or Assyrians and they begin to return to India, first as the Early Rigvedic Indo-Aryans (before the Vedic language borrowed Dravidian sounds). Came into contact of Santanu while they were on the Sarasvati.	Santanu, c. 1350 { 125-I, 10 } — „ —	Painted Grey Ware-Late Bronze Age Phase (Hastinapur II).
1345-1324 BC	Nazi-Maruttash. Washashatta (Hurri). Mitanni and Hurri overthrown	The Pandava-Kauravas { 125-I, 6 }. '— „ — Janmejaya III { 125-I, 3 }	Krishna. Mahabharata War. presence of iron begins Iron increases in use.
	—— UPPER LIMIT OF INDIAN PROTOHISTORY : BEGINNING OF HISTORIC PERIOD OF INDIA'S PAST —— ACCORDING TO H. RAYCHAUDHURI { 118-II }		Iron Age established : disappearance of microliths and related stone industries.
		Satanika { 125-I, 2 }	Early Iron Age.
		Adhisimakrishna { 125-I, 1 }.	Early Iron Age.

N. B. :— (1) The position of the Indian dynasts shown not to be taken seriously.

(2) The Blade industries and related Mesolithic, Neolithic and Chalcolithic cultures were originated in the Middle East and in wake of the post-glacial Afrasian Desiccation gradually moved towards India and gradually spread in India. It is therefore obvious that a culture which belonged to a particular period in the Middle East was later in age in northern India and still later in southern India.

(3) Due to paucity of copper in proportion to the metal equipment which a large population in India needed, the chalcolithic peoples had to continue the use of microliths and other forms of stone tools down to the beginning of the Iron Age in the subcontinent.

THE POST-GLACIAL CLIMATIC OSCILLATIONS IN INDIA

122-II. The climatic conditions never remain constant and uniform at a single place. They fluctuate intermittently and with them fluctuate the ecological conditions for a particular living-pattern from time to time and from place to place, with the result that when one population evacuates on such a change another takes its place in due course. We have noticed earlier how such changes have occurred on the Sarasvati and how newer and newer peoples have settled in the wake of the evacuation by earlier ones. The entire humanity has slowly but surely been on a constant move and such terms as 'aborigines', or '*adivasis*' have no validity whatsoever. The Tibeto - Burman - speaking tribes who are regarded as the aborigines of Assam and adjacent areas have settled after the coming of the Aryans there.

123-II. Information on the post-glacial climatic oscillations in India is still too scanty. Climatologists and ecologists all over the world [Corter, W. G., 'On the Ancient & Modern Formation of Delta in the Persian Gulf; *Phil. Mag.*, Ser 3, VII, 1835 : Blanford, W. T., 'On the Origin of the Superficial Deposits in the Valleys & Deserts of Central Persia', *Q. J. Geol. Soc.* XXXIX, i, 1873 : de Tchihatchef, P., 'Deserts & Salt Disricts of Asia', P. Lit. Soc., Liverpool XXXII, 1877 : Godwin-Austen, H. H.,' On the Post-Tertiary & More Recent Deposits of Kashmir & Upper Indus Valley; R. Brit. Asso, L, 1880; Schlichter, H., 'The African & Asiatic Coasts of the Indian Ocean in Antiquity', *As. Quart. Rev.* Ser II, II, 1891 : Sykes, P. M., The Geology of South Persia with Account of the Helmand Delta and the Lut; *R Brit Assn*, LXXII, 1902 : Historic Fluctuations of the Caspian Sea', *Bull. Amer. Geog. Soc.* XXXIX, 1907; *The Pulse of Asia*, Bost, 1907 Olmstead A. T.; Climate & History', J. Geog., X, 5, 1912: Huntingtion, E., *Civilization & Climate*, New Haven, 1924 : Brooks, C. E. P., *Climate Through the Ages*, Lon, 1926 : Cressly, G. B., The Climate of the Glacial Period in East Asia; *Proc III Pan-Pacific Science Cong.*, Tokyo, 1926 : Huntington, E., & Visher, S. S., *Climatic Changes, their Nature & Causes*, New Haven 1922 ; Norin E., Preliminary Notes on the Late Quarternary Glaciation of the North-West Himalaya; Geog *Annaler* VII, 3, 1925 : Cammiade, L. A., & Burkirtt, M. C., 'Fresh Light on the Stone Ages of South-East India', *Ant*, IV, 1930 : Pilgrim, G. E., 'Correlation of Ossiferous Sections in the Upper Cainozoic of India., *Am. Mus. Novitates*, 704, 1934 : De Terra, H., & Hutchinson, H., 'Data on Post-Glacial Climatic Changes in North-West India.' *Current Science* V, July 1936 : De Terra, H., & Paterson, T. T., *Studies on the Ice Age in India & Associated Human Cultures*, Wash, 1939 : Writ, W. B. *Quarternary Ice Age*, Lon, 1937 : Gillette, H. P., 'Climatic Cycle of 25,500 Years,' *Pan-Amer. Geologist*, LXIX, March, 1939 ; Todd K. R. U., 'Palaeolithic Industries of Bombay; *JRAI* LXIX, 1939 : Mills, C. A., & Ogle, Cordelia, *Climate Makes the Man*, NY, 1942 : Markham, S. F., *Climate & the Energy of Nations*, Ox, 1944 : Murry, G. W., 'The Egyptian Climate : An Historical Outline,' *Geog. J.*, CXVII, 1951 : Movius, H. L. Jr., 'Early Man & Pleistocene Stratigraphy in Southern & Eastern Asia,' *Papers of Peabody Mus*, U. S. A. XIX, 1944 : Zeuner, F. E., *The Pleistocene Period*, Lon, 1945 : Cotton, C. A., 'The Significance of Terraces due to Climatic Oscillations,' *Geol. M*, LXXXII, 1945 : Durham, J. W., 'Cenozoic Marine Climates of the Pacific Coast; *Bull. Geol. Soc. Am.*, LXI, 1950 : Zeuner, F. E., *Stone Age & Pleistocene Chronology in Gujarat*, Poona, 1950 : Saur, C. O., 'Environment & Culture during the Last Deglaciation,' *Proc. Am. Phil. Soc.* The Symposium on the Rajputana Desert, National Institute of Sciences, ND, 1952 : XCII, 1948 ; Bolek, H., 'Klima und Landchaft Irans in Vor-und fruhgeschichtlicher Zeit,' *Geog. Jahresbericht aus*

APPENDIX-1

THE FLOOD LEGEND

The Sumero-Babylonian Flood Legend { 9.53.52-II }, the Indian Great Epics, the story of the Ocean-Churning { 351-I, 21-II }, and the Christian Bible are the ancient literary works which have spread far and wide out of the countries of their origin { 326, 351, 352-I } in the course of the diffusion of culture. There is no doubt that the Flood Legend is of the Sumero-Babylonian origin and the event seems to have occurred in Sumer about 2900 BC [Mallowan, M. E. L., 'Noah's Flood Reconsidered', *Iraq* XXVI.2.1964, etc.] and it is futile to locate its scene or look for its archaeological remains in India { 89-II }. The following is the substance of the Epic of Gilgamish [Thompson, R. C., *The Epic of Gilgamish*, Ox, 1930] in which the story of the Flood or the Deluge occurs as an episode.

Gilgamish was the ruler of Uruk (Erech of the Bible, O. T., *Genesis 7*, the modern Warka), which he was ruling in an autocratic manner, so that his people prayed to their gods to be delivered from his tyranny. The gods therefore created a wild man, Enkidu, and he was enticed into the city of Uruk by the wiles of a dancing girl of the Temple of the Goddess Ishtar. Gilgamish intervened and a tremendous fight followed. The result being indecisive, the two heroes so admired one another's prowess that they became fast friends. While attempting to take cedar-wood to the city, they, with the help of the Sun-god (Shamash), killed Humbaba, the ogre who guarded the forest. After that the goddess Ishtar fell in love with Gilgamish, and since he repelled her advances, begged her father Anu, the Sky-god, to make a divine bull to destroy the two heroes. Enkidu killed the bull and gods therefore decreed that he must die, but Gilgamish was to be spared. Grieved by his friend's death, Gilgamish set out in search of the fruit of eternal life for reviving Enkidu. At length he meets Ur-Shanabi, who tells him that he had been the boatman of Uta-Napishtim, who escaped from the Great Flood, and had attained immortality. After many adventures he found out Uta-Napishtim. The latter related to the former that when he was living at the city of Shuruppak (modern Fara), and when the great gods Anu (Sky-god worshipped at Uruk), Enlil (Earth-god worshipped at Nippur) and their wives were discussing to send a great flood for the destruction of the sinful mankind, Enki (Ea, half-fish and half-man, an originally foreign god worshipped at Eridu { 45, 74-I; Fn 14; 43, 106-II } who had come from Dilmun { 92-100-II } and who presided over the sea, wisdom, arts and crafts) was also present. Enki warned his favourite Uta-Napishtim and instructed him to construct a boat in order to save himself and some animals and men from the Flood, which came and lasted for six days. On the seventh day the ship ran aground on the Nisir or the Northern Mountain. When Enlil saw that Uta-Napishtim was saved he came wrathful, but Enki arrived and reproved him for destroying a sinless man. Enki told Enlil that he might send lions, famine, plague, etc., to dimish the mumber of men, but he must not again attempt to destroy all mankind by a flood. Enlil was appeased and conducted Uta-Napishtim to the land of Dilmun where he received the immortality.

APPENDIX-2

PRITHI - VAINYA

Prithi { 313,314-1 } or the Puranic Prithu was the son of Vena, who was the son of Anga. The sages inaugurated Vena, monarch of the earth, but he was wicked by nature and prohibited worship and sacrifice. The sages therefore beat Vena to death. In the absence of a king robbery and anarchy arose, and the sages therefore rubbed the thigh of the dead king. There came forth a man called the Nishada and Prithu, Vena's son. At the birth of Prithu all creatures rejoiced. Prithu then became invested with universal dominion. His subjects, who had suffered from famine, besought him for the edible plants which the earth had with-held. In anger he seized his bow to compel the earth to yield the usual supply. She assumed the form of a cow and fled before him. Unable to escape, she implored to spare her, and promised to restore all the needed fruits. Prithu therefore, having made Swāyam-bhuva Manu the calf, levelled the hills and milked the earth. Thence proceeded all kinds of corn and vegetables upon which people subsist now. By granting life to the earth Prithu was called her father, and she thence derived the patronymic appellation of Prithivi.

ABBREVIATIONS

BOOKS

AHIL, History of Indian Literature (M. Winternitz) 1927. *AIHT*, Ancient Indian Historical Tradition (F. E. Pargiter), 1922. *A&NA*, Asia & North America: Trans-Pacific Contacts, 1955. *AO&D*, Agricultural Origins & Dispersals (C. O. Saur) 1962. *A Iraq*, Antiquity of Iraq (S. Pallis), 1956. *ARWPak*, An Anthropological Reconnaissance in West Pakistan (H. Field), 1955. *CAH*, Cambridge Ancient History. *CII*, Corpus Inscriptions Indicarum. *CHI–I*, Cambridge History of India, Vol. I (E. J. Rapson). *DC*, The Dawn of Civilization (ed. S. Piggot), 1961. *DKA*, Dynastics of the Kali Age (F. E. Pargiter), *CDHM*, A Classical Dictionary of Hindu Mythology (J. Dowson), 1961. *EB*, Encyclopaedia Britannica. *EIP*, Early India & Pakistan (R. E. M. Wheeler), 1959. *Foote–I*, Foote Collection of Indian Prehistoric & Protohistoric Antiquities (R. B. Foote), various vols. *GI-W*, Geology of India (D. N. Wadia), 1949. *GI–K*, Geology of India & Burma (M. S. Krishnan), 1956. *GB*, The Greatness that was Babylon (H. W. F. Saggs), 1962. *BG* or *GB*, Gazetteer of Bombay. *HIP&C*, Historians of India & Pakistan (ed. C. H. Philips), 1961. *HCA*, History of Civilization & People of Assam (P. C. Chaudhury), 1959. *HM*, History of Mankind, (ed. Jacquetta Hawkes), 1963. *IG*, Imperial Gazetteer of India. *I & P*, India & Pakistan (O. H. K. Spate), 1954. *IA&H*, Indo-Aryan & Hindi (S. K. Chatterji), 1950. *LEM*, Larousse Encyclopedia of Mythology (Felix Guirand), 1959. *MGI&B–I*, A Manual of the Geology of India & Burma (H. B. Medlicott and others), 1893. *MRFE*, Man's Role in Changing the Face of the Earth (ed. W. L. Thomas), 1956. *Mhb*, Mahabharata. *MIG*, Mohenjo-Daro & the Indus Civilization (J. Marshall), 1933. *NLMAE*, New Light on the Most Ancient East (G. V. Childe), 1951. *OR*, Origin of Races (C. S. Coon), 1963. *PIIK*, Prehistoric Investigations in Iraqi Kurdistan (R. J. Braidwood), 1960. *p.*, Purana. *PHAI*, Political History of Ancient India (H. C. Raychaudhuri), 1950. *PPIPak*, Prehistory & Protohistory of India & Pakistan (H. D. Sankalia), 1960. *PA&PD*, Pre-Aryan & Pre-Dravidian in India (S. Levi, J. Przyluski, & J. Block), 1929. *Ram*, Ramayana. *RIS&A*, Royal Inscriptions of Sumer & Akkad (G. A. Barton), 1929. *Rv*, Rigveda. *SGAMI*, Studies in the Geography of Ancient & Medieval India (D. C. Sarkar). *ScMn*, Science of Man (Mischa Titiev), 1963. *SIAInd*, Studies on the Ice Age in India & Associated Human Cultures (H. de Terra & T. T. Paterson), 1939. *THI*, Traditional History of India (G. R. Pillai), 1960. *VC*, Vinished Civilizations (ed. E. Bacon), 1963. *VI*, Vedic Index of Names & Subjects (A. A. Macdonnel & A. B. Keith), 1958.

PERIODICALS

AJA, American Journal of Archaeology. *AA*, American Anthropologist. *ABORI*, Annals of Bhandarkar Research Institute. *Ant*, Antiquity. *AI*, Ancient India. *CS*, Current Science. *CA*, Current Anthropology. *IAR*, Indian Archaeology–A Review. *EI*, Epigraphia Indica. *ILN*, Illustrated London News. *IA*, Indian Antiquary. *IHQ*, Indian Historical Quarterly. *JUB*, Journal of the University of Bombay. *JAS Beng*, Journal of Asiatic Society of Bengal. *JBBAS & JASB*, Journal of Bombay Branch of Asiatic Society. *JNE*, Journal of Near Eastern Studies. *JAOS*, Journal of American

Oriental Society. *MASBeng*, Memoirs of the Asiatic Society of Bengal. *MGSI*, Memoirs of the Geological Survey of India. *MI*, Man in India. *N*, Nature. *PISC*, Proceedings of the Indian Science Congress. *RGSI*, Records of the Geological Survey of India. *SC*, Science & Culture. *VVRB*, Vallabh Vidyanagar Research Bulletin.

GEOGRAPHICAL NAMES

A, Assam. An, Andhra Pradesh. B, Bengal. Bt, Bhutan. Bl, Baluchistan. G, Gujarat. H, Himachal Pradesh. Hr, Haryana. K, Kerala. Ks, Kashmir. Ld, Ladakh. Mp, Madhya Pradesh. M, Madras or Tamil Nadu. Mh, Maharashtra. Np, Nepal. Nw, North-West Frontier (Pakistan). O, Orissa. P, Punjab. R, Rajasthan. S, Sind. Sk, Sikkim. Up, Uttar Pradesh. Berl, Berlin. Bom, Bombay. Cal, Calcutta. Del, Delhi. Lon, London. Ox, Oxford. ND, New Delhi. NY, New York. Par, Paris. Wash, Washington.

SYMBOLS

[ ] Bibliographical references.

{ } Cross-references or the Author's statements or remarks.

BP Before the Present.

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